Gordon Institute of Business Science
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Identifying the presence of a portfolio of critical innovation capabilities in the South African innovation industry.

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ABSTRACT

Creating a portfolio of effective innovation capabilities has become a critical competence to compete, and is vital in innovation management. The need for this research originated from the background that innovation capabilities are seen as abstract concepts in practice and that the possibility of a portfolio of innovation capabilities exists in organisations as ubiquitous elements of the innovation process. A deeper understanding of innovation capabilities present, in the South African context of innovation, and the challenge to populate a portfolio of innovation capabilities for successful innovation is paramount. The globalised environment of business, affects the need for innovation at an exponential rate and current core organisational capabilities, culture, environment and processes, may not be conducive to innovation capability building, successful innovation, and even organisational survival. By creating environments that support innovation and by being aware of the symbiosis of capabilities within a portfolio of innovation capabilities, executives and innovation team leaders can manage innovation methods and processes to remain more competitive.

The research investigated the executives' and innovation leaders' views, knowledge and experiences of innovation capabilities and the portfolio of innovation capabilities. The literature review examines the culture of innovation, measures of innovation, capabilities and innovation practices as a means to identify actual innovation capabilities in use. The information attained, was used during the semi-structured interviews with the aim to provide structure and commonality to the practitioners' terms and practical experience of innovation. Interviews were conducted with 15 interviewees who consisted of executives and innovation experts who dealt directly with innovation drives within their organisations. The outcome allowed for the identification of innovation capabilities in practice and the articulation of a portfolio of innovation capabilities found in South African organisations.

The executives and innovation leaders were forthcoming in sharing their organisations' innovation process successes and shortcomings, and communicated their experiences and concerns, pertaining to innovation capabilities within their companies. A model of the ideal portfolio of innovation capabilities (Figure 17) emerged from the findings of the research results. It presents a conceptualised framework of the ten innovation capabilities that were identified and labelled during the data analysis process. The model further depicts the base incubation of innovation culture for the major innovation capabilities presented. The outcome of this research could contribute to executives' and innovation leaders' facilitation of successful innovation in organisations through the building of portfolios of innovation capabilities, relevant to their industries.

KEYWORDS

Innovation

Culture

Portfolio

Executives

Capabilities

Innovation Practice

Innovation Capability

Dynamic Capability

Operational Capability

DECLARATION

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

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Harald Richter

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CHAPTER 1: INTRODUCTION TO THE RESEARCH PROBLEM

1.1 Description of the problem and background

Some of the most astonishing transformations in the global economy is the rapid build-up of production capabilities in China, India, South Korea, Chile and other emerging economy countries. Recently, many of these have also succeeded in building significant innovation capabilities, thus embarking on the transition from production to innovation. Organisations in these markets are no longer only focused on copying of innovation activities, but have accumulated advanced innovation capabilities and are approaching ever more strategic areas (Lema, Quadros & Schmitz, 2015). Although South Africa has never had a panoptic production capability and the economy has mainly been based on commodity trading, there are many organisations that rely on innovation and technology to compete nationally and even on a global scale. These organisations, therefor have to stay relevant in innovation and in building ever changing competence or innovation capability.

Much has been written about the importance of innovation and the ability to do so continuously, also about dynamic capabilities and innovation capabilities implemented in isolation, but little research has been done on the existence of innovation capabilities used in conjunction with each other, to foster successful innovation. For South African organisations to be competitive in a global business environment, they have to emulate the innovation systems of the success stories, amongst them.

1.2 Research Scope

We know that there are many models for innovation and different innovation capabilities that innovative organisations successfully implement. Few in South Africa, however, are able to innovate continuously. Due to the complexity of the traditional organisation, there are several areas to study, to find the possible “x-factors” that incubate innovation in the modern business environment and their ability to do so continually. One should perhaps define the term “Innovation” used in this instance. Innovation is built on creative ideas as basic elements. “Organisational innovation is the successful implementation of creative ideas within an organisation. Within this definition, the ideas can be anything from ideas for new

products, processes, or services within the organisation's line of business, to ideas for new procedures or policies within the organisation itself. The term "implementation" is used broadly here, to encompass elements of developing ideas and putting them to use" (Amabile, 1988). Organisations may have innovation hubs, dedicated to idea generation, but may not implement innovations due to organisational culture or rigidness. Such organisations can therefore not be called innovative. In this context "innovation" would imply successful innovation that would therefore be or have been implemented. Creativity is the production of novel and useful ideas which on its own does not constitute innovation (Amabile, 1988). Theoreticians have written many articles on the theory and models of innovation, but for the most part, the practitioner is interested in the current models of innovation that are successfully implemented in firms, known for innovation. Experts on creativity reject the notion of a playbook for innovation (Eisenmann, Ries, & Dillard, 2011). It would be fortuitous if it was possible to follow a checklist to innovate successfully, but unfortunately that's not always possible, especially in the field of innovation, where there are so many possible variables. Traveling into new territory means never being able to map your route fully beforehand (Brown & Katz, 2011).

1.3 Reseach Motivation

The purpose of this integrated business research project is thus to delve into South African organisational structures and culture, to explore and unearth the elements and factors, referred to as a "portfolio of innovation capabilities" (Holtzman, 2014), that make for continuous and successful innovation. The task is to specifically, unpack what is also called the "Innovation DNA" in successful South African companies to serve as a model for organisations that struggle to innovate.

The ultimate outcome of this study would be to contribute to the stream of literature about innovation by attempting to identify the fusion of innovation capabilities and which innovation methodologies these entail, currently implemented by firms, if indeed more than one, successfully. Numerous articles refer to dynamic capabilities and operational capabilities, but little can be found, pertaining to the development of a "portfolio of innovation capabilities", as introduced by Holtzman (2014) as a general viewpoint based on 20 years of experience in the field of innovation, research and development, and new product development. Although his article in the Journal of Management Development is not research based, the notion of organisations implementing a "portfolio of innovation capabilities" is a novel approach to innovation, and certainly has merit to explore further for relevance to business as a whole. According to Holtzman (2014), the only type of innovation that has a significant financial impact and that can create real value to scale, sustainable innovation, is extremely difficult.

It is of importance to build on this new way of thinking about developing innovation capabilities and new product development, and to apply the findings to the South African culture of innovation. A model of a mix of innovation capabilities in a successful portfolio may be found to answer to why some organisations innovate successfully and others don not. Diaz & Faherty (2015) have a similar view to Holtzman (2014), in that they believe that a successful innovation capability would need the support of at least two other innovation capabilities. That would make a portfolio of innovation capabilities of at least three capabilities for successful innovation a necessity. One would dare to ask if there is such a thing as an “anchor” or imperative capability, before others could follow, whether as support capabilities or adjacent competencies.

Innovation capabilities that may be prevalent in such a portfolio are the quality and creativity of an organisation’s human capital and their talents, or the culture within the organisation, where a degree of creative freedom is given to its employees, and of nurturing a safe environment to spur employees into idea generation. The organisational leadership and budget allocation for R&D and innovation also play a part in this study of capabilities.

The pursuance of exploration and exploitation by strategic leadership, has frequently been highlighted as ubiquitous (Tushman & O'Reilly, 1996; Smith & Tushman, 2005). The study searches for the presence of exploratory or exploitative innovation, an organisational openness to risk (Brown & Katz, 2011), open innovation and/or design thinking, to form part of a possible portfolio. The presence of innovation based on mature knowledge rather than recent, forms part of the study of a capability portfolio, although earlier research has offered arguments and evidence, inconsistent about the implications of knowledge maturity (Capaldo, Lavie & Messeni Petruzzelli, 2014).

And finally, this study explores the influence of environmental dynamism on these South African organisations as part of the possible capabilities. This influence is examined from a market perspective rather than with a focus on national politics and economic policies. When looking at the market size and the amount of competition, or lack of, it is theorised to have a decided effect on the level of innovation in organisations and the creation of a portfolio of innovation capabilities that is difficult for competitive organisations to duplicate.

1.4 Research Problem

In the case of modern organisations, innovation is imperative and frequency of innovation lies at the heart of competitiveness. Innovation needs to be continuous and proactive not reactive (Holtzman, 2014). Organisations can not afford long incubation processes as with inventors or entrepreneurs. The innovation process must be one that has a measurable and proven outcome. The adoption of metrics that support entrepreneurial growth is needed if a company is planning to build a portfolio of innovation capabilities (Holtzman, 2014). It is this presence of a portfolio of innovation capabilities, and the percentage mix of these methodologies that lead to successful innovation, that the research seeks to evaluate.

&(identified two dynamic capabilities and six operational capabilities that serve as innovation capabilities according to their study in the similar field. This study seeks to extract if parallels are found in South African organisations and endeavours to uncover a confluence of all or some of the elements mentioned, to yield a portfolio of innovation capabilities. Further, the specific capability blend that leads to continuous and successful innovation, which could finally produce a model of a portfolio of innovation capabilities.

CHAPTER 2: THEORY AND LITERATURE REVIEW

2.1 Introduction

More than a million people in the United States alone work in corporate research and development facilities. While this has produced tremendous success, corporations are finding that investment in science or technology alone, doesn't bring the returns it once did (Brown & Katz, 2011). An ever-increasing amount of companies are looking to innovating idea and product creation to stay competitive in today's globalized market. Innovation advances every aspect of our lives and business concerns at an alarming pace. Many big companies have the resources to spend large amounts of money on R&D, but smaller companies do not necessarily have the means for formal R&D and generate innovation in unconventional ways, which does not mean with less success. According to Adams, Bessant, & Phelps (2006), R&D may be only one of many various ingredients into the innovation process and thus cannot be considered as an adequate proxy. It also does not seem to be a very useful measure for small and medium-sized enterprises (SMEs) that may not have formal R&D activities, as well as for service industries, which tend to have a lower R&D intensity (Hipp and Grupp, 2005). According to Cebon and Newton (1999) and Dodgson and Hinze (2000), high levels of R&D intensity are therefore not necessarily evidence of good innovation practice and may mask process inefficiencies.

In academic societies there is less of a consensus pertaining to innovation, although knowledge increasingly seems to be coming from everywhere, in the form of fashionable notions such as 'customer and partner collaboration', 'network-driven innovation', 'outside-the-walls product development', etc., demonstrated by Adams, Bessant, & Phelps (2006). An up to date and clear model of the process of innovation and the management thereof is of critical value to both practitioners and academics alike. Most every field would take an interest, whether product or service, technological, administrative or process driven. To innovate, through one or more theoretical models, is an imperative in our globalised world, and to innovate frequently and continuously, is a competitive capability, that most organisations strive for. Identification of models and perhaps a holistic framework of a portfolio of innovation capabilities, that successful innovative companies follow in practice, in the pursuance of sustainable innovation could be of important relevance to academics and specifically practitioners. By using an empirical approach to study such companies, the findings were assessed qualitatively to reach a mean conclusion and build a theory on

successful implementation of innovation capabilities currently used and demonstrated by the companies researched, to foster innovation.

Literature is defined by varied approaches, prescriptions and practices that may be confusing and contradictory (Michelsen, 2009). There has indeed been a plethora of literature written on the subject of innovation management in the past two decades and many theoretic models of innovation measures have been created.

Ideas are the raw materials for innovation. Generation and screening of ideas is relatively inexpensive, and can have a substantial impact on ultimate success or failure (Cooper 1988). Several authors have theorised about the early stages of the innovation process as a clouded period (Kim and Wilemon, 2002; Moenaert et al., 1995; Verworn, 2002), which would include the processes of opportunity identification, opportunity analysis, idea genesis, idea selection and concept development (Koen et al., 2001; Adams, et al., 2006). Existing theories are matched to existing practice where relevant, in the quest to answer the research questions. This further tests the view of Adams, et al. (2006), “While there are areas of commonality across these innovation management models, no one model covers every dimension.” Perhaps Holtzman’s (2014), proposition of a portfolio of innovation capabilities acts as a solution.

Considerable work has been done on the situational and psychological factors that support innovation in organizations. To a greater extent, it has been established that the perceived work environment (comprising both structural and cultural elements) does make a difference to the level of innovation in organisations (Amabile et al., 1996; Ekvall, 1996). Work environment factors appears to advance creative and innovative behaviours (Mathisen and Einarsen, 2004). It has become clear that organisations could create environments in which innovation can be encouraged or hampered (Dougherty and Cohen, 1995; Tidd et al., 1997).

A common theme is that of the poly-chronic organisation, where an organisation can have the capacity to be in two states at once (Becker and Whisler, 1973). Shepard (1967) described this as a “two-state organisation manoeuvring between loose and tight”, and Mitroff (1987) as “business-as-usual versus business-not-as-usual”. For example, this means that organisations need to be able to provide enough freedom to allow for the exploration of creative possibilities, and simultaneously have sufficient control to manage innovation in an effective and efficient fashion (Adams, et al., 2006). Factors of successful innovation in organisations seem to be influenced by a broad organisational attitude towards innovation itself and finally the enablement through organisational alignment towards the goal of idea creation. It isn’t merely a matter of putting creative minds in a room and expecting delivery as an outcome after a given period of time. Taking into account that a

good brainstorming session could be the spark to most innovation. According to Adams, et al. (2006) above, even the environment and organisation, finding balance between freedom and control, are factors in idea generation. Environment specifically being, “safe havens, without which innovation outcome might be constrained.” Scholars agree that successful innovation has one dominating ingredient, though it be intangible, and that is the organisational culture. Without a culture that fosters innovation, none of the capabilities of innovation could be incubated to render success.

2.2 Theory and Factors of Innovation

Many scholars have researched innovation processes and the measurement of innovation. One of the earliest is Everett M. Rogers, who was seen as the inventor of the diffusion of innovations theory. He first described diffusion in 1962, as “a process of communicating an innovation over time, through certain channels, amongst the members of a social system” (Rogers, 2003). To facilitate the assessment of different rates of adoption, Rogers identified five attributes of innovation: relative advantage, compatibility, complexity, trial ability, and observability (Kapoor, Kawaljeet, Dwivedi, & Williams, 2014). Tornatzky and Klein (1982) used Rogers’ theory as a base and identified 25 more innovation attributes after conducting research of their own, mainly in the field of Information Technology. Others, who have added to Rogers’ attributes, followed them. Even Rogers himself reviewed these and his own up to 2003, when his books were still printed.

While useful, these attributes may be restricted when one approaches innovation from a measurement perspective. There are many competing models where consensus is only evident at abstract levels. Measurement models have mainly been developed in the field of technology, so generalizability is constrained and with activities as focal point, models neglect the organisational pervasiveness of innovation and its socio-technical connectedness within all areas of the organisation (Adams, et al., 2006).

In their article, “Innovation measurement: A review”, Adams, et al. (2006) suggested that there is an absence of a holistic framework that covers the spectrum of innovation activities. It would be difficult to incorporate the vast existing literature into a single solution. Should such a framework exist it would be useful for managers to measure their own and organisation innovation ability and activity. It would create a benchmark and serve as a map to identify areas of improvement. Kerssens, van Drongelen and de Weerd-Nederhof (1999) pointed to “a lack of measurement procedures to help managers diagnose poor innovation performance or support improvement” (Adams, et al., 2006).

Adams, et al. (2006) proposed seven areas of innovation management measurement: inputs management, knowledge management, innovation strategy, organisation and culture, portfolio management, project management and commercialisation are cited as areas for measurement of successful or innovation failure.

They proceeded by stating: "…there has been considerable empirical work on organisational climates supportive of the innovation process, and several measurement instruments have been developed…", which Mathisen and Einarsen (2004) reviewed. The Team Climate Inventory (TCI) (Anderson and West 1996, 1998) and the KEYS instrument for evaluating the work environment for creativity (Amabile et al., 1996) have been found by Adams et al. (2006) to be rigorous and robust. The TCI is founded on four main factors: participative safety (participation of the team in decision-making procedures, and the feeling of psychological security of team members about proposing new ideas about improved ways of doing things), support for innovation (practical support for innovation attempts comparative to professed support by senior management), vision (are the team's objectives and vision clearly defined, shared, attainable and valued) and task orientation (commitment of the team to achieve the highest possible standards of task performance, as well as the use of constructive progress monitoring procedures) (Anderson and West 1996). Kivimäki et al. (1997) added a fifth factor, 'interaction frequency', which relates to the frequency of contact and communication of the project team with one another (Adams et al., 2006).

Indeed, a strategy framework that is one of the most influential, is Michael Porter's five forces model, which supposes that a company compares itself to other companies in the same industry. According to Holtzman (2014), industry lines are continuously erased and redrawn in the present fast moving environment, which can blindside a company.

A difference between the financial returns that a firm can derive from its commercialised innovations and the scientific value of these innovations can be found, which may have an impact on later innovations. The scientific value of an innovation depends on conditions within the industry an organisation operates in, such as the institutional environment (Mueller, Rosenbusch, & Bausch, 2013), the innovative efforts of competitors (Katila & Chen, 2008), and the geographic proximity of inventors (Audretsch & Feldman, 1996; Jaffe, Trajtenberg, & Henderson, 1993). Organisational characteristics, such as the firm's absorptive capacity (Cohen & Levinthal, 1990), combinative capability (Kogut & Zander, 1992), and the behaviour of individual inventors (Felin & Hesterly, 2007; Zucker, Darby, & Brewer, 1998), is further influenced by the scientific value of an innovation. Other than the environmental, organisational, and individual mechanisms, the attributes of knowledge elements that the innovation is based on, relates to the value of an innovation to academics and scholars (Capaldo, Lavie & Messeni Petruzelli, 2014).

Organisations should understand the element of risk in innovation as well as the advantages and disadvantages in possible failure. Holtzman (2104) stated that one should be responsible, by taking a balanced approach to innovation risk. Innovation and risk are both inseparable parts of innovation. The approach to attempt managing risk out of innovation, will stifle rather than encourage innovation. Organisations should rather recalibrate their attitudes towards risk in order to create an environment where innovation can thrive (Holtzman, 2014).

2.2.1 Keys Instrument for Assessing a Work Environment for Creativity

As recent as 2013, Amabile, Conti, Coon, Lazenby & Herron (2013) developed the KEYS creativity model. This model propagates that perceptions of five work environment dimensions may play an important role in influencing creative behaviour in organisations, namely, the challenge of the task, the encouragement received in the organisation, the support from the work groups, the encouragement received from a supervisory level and organisational impediments. The KEYS scale assesses ten areas of an organisational environment to evaluate the creative and innovation probability in an organisation; 1.) Organisational encouragement, 2.) Supervisory encouragement, 3.) Work group supports, 4.) Sufficient resources, 5.) Challenging work, 6.) Freedom, 7.) Organisational impediments, 8.) Workload pressure, 9.) Creativity and 10.) Productivity. These, in turn, are are subdivided into Stimulant scales, Obstacle scales and Criterion scales. KEYS assesses psychological perceptions of the work environment and may be useful in future research and theory development in organisational creativity by providing scholars with a psychometrically sound tool for quantitatively assessing the perceived work environment for creativity. This tool can be profitably used in conjunction with interviews and questionnaires, as has been done in recent research (Amabile & Conti, 1994). Whether used alone or with other methods, this instrument and the model upon which it is based give researchers a way to seriously turn their attention toward creativity in organizations, which is the root of innovation (Amabile, 2013). They further stated that the most important lesson for management from the results of the KEYS research is perhaps that the organisation's work environment does make a difference in the level of creativity. Managers at all levels, that want to promote creativity and innovation in their companies should not only pay attention to the sort of individuals they hire to the personal characteristics and skills that early creativity research emphasized, but should also be cognisant of the environments that they create for these potentially creative individuals (Amabile, 2013).

Scholars further agree that the rate of innovation has sped up considerably since these models were theoretically examined, and that innovation itself has evolved due to

technological advances and further globalisation. Leadership has become part of the innovation debate and so has innovation itself, been categorised into explorative and exploitative innovation or innovation built on mature or recent knowledge. Further evolution in innovation has led to “design thinking” and lately innovators discuss the use of a “portfolio of innovation capabilities” to successfully innovate. The ideal is for organisations to have the ability to innovate continuously.

2.3 A Culture of Innovation

2.3.1 Schein’s Model of Organisational Culture

Prior research mostly considers organisational culture as a single construct. Schein (1992), however, considered it important to analyse and distinguish between several layers of culture. According to Schein (1992) confusion in definitions of culture may exist due to the failure of differentiating at which levels organisational culture may manifest positively. Observed patterns of behaviour is thus determined by the values and norms within an organisation. Norms, understood as expectations of acceptable behaviours held by an organisation, which could force social obligation or pressure (O'Reilly et al., 1991; Schein, 1992), i.e. innovative behaviours can result from norms that support information exchange about new ways of doing things within an organisation (Amabile, 1988; Moorman & Miner, 1997). Norms are derived from values, although intangible, could be evident in organisational symbols, rituals, language, and physical workspace arrangements (Schein, 1992).

2.3.2 Hofstede’s Five Dimensions of Culture

Power distance index (PDI), uncertainty avoidance index (UAI), individualism index (IDV) and masculinity index (MAS) are the original four dimensions of Hofstede’s framework to describe cultures from a national perspective. A fifth dimension, long-term orientation (LTO) was later added to this framework (Hofstede, 2001). This framework has been applied in innovation studies to research national and global consumer innovation. According to these five dimensions, innovation in organisations will mostly follow suit to previous studies done on national level. When looking at Hofstede’s Power Distance Index (PDI) organizations in countries where a high power distance is the norm, will often have centralised decision structures, authority, and formal rules. Hierarchy would thus constrain the sharing of information and lower rates of innovation adoption would occur (Zmud, 1982). The second dimension, the Uncertainty Avoidance Index (UAI) signals to resistance to innovation in organisations in countries with a high uncertainty avoidance index, where attitudes are

extremely risk averse. The Individualism Index (IDV) is the dimension where the relationship between the group and the individual is taken into account, pertaining to choice and the decision process. Collectivistic organisations may lag in the decision-making process, whereas individualistic organisations allow employees more freedom to make decisions, develop and try new products. The Masculinity Index (MAS) covers the different values held between men and women. Feminine values would include equality, solidarity, social relationships, consensus seeking and the use of intuition, where masculine values would stand in contrast with ambition, competitiveness, material values, performance, rewards and recognition. The last and youngest dimension, Long-term Orientation Index (LTO) professes that organisations with a long-term orientation will have a future focus on results and be more receptive to change, which means that they would be expected to be more innovative (Van Everdingen & Waarts, 2003).

2.4 Innovation Methodologies & Practices

2.4.1 Individual Creativity

Not allowing to be side-tracked from the focus on how organisations are capable to innovate at scale, one must pose the question of influence of individual talent and creativity in an organisation's innovation process. The Innovation Potential Indicator (Patterson, 2003) renders a framework for the investigating of individual behaviours that might promote or inhibit innovation in the workplace. This IPI was conceptualised around four dimensions: an individual's motivation to change, challenging behaviour, preferred approach to work, and preference for tried and trusted methods of work, in stead of doing things differently (Adams, et al., 2006). Patterson focused on the individual. The question of appropriate measuring of an individual's innovative skill arises, and if such a measurement exists. Patterson's framework is, however, not suited to answer this study's question, although it might highlight certain aspects of the processes to be explored in this study. Contrary to this stance, Eisenmann, Ries, & Dillard, (2011) wrote about guidelines for entrepreneurial ideation gleaned from insights shared by entrepreneurs, design thinking principles, and academic research on creativity and innovation, of which collaboration is one. According to them, researchers have dispelled the myth of the lone genius inventor. The prolific American inventor Thomas Edison, for example, surrounded himself with brilliant and determined collaborators in his Menlo Park, New Jersey laboratory. Most great creative work is done in small teams: think of Lennon and McCartney, Jobs and Wozniak, or Brin and Page. One collaborator will say something that triggers another's ideas, and co-founders will support each other emotionally when the creative process stalls (Eisenmann, et al., 2011).

2.4.2 Group Ideation

As with Patterson, where the focus turned to the individual, one has to explore the aspect of teams working in innovation management areas, and the group influence on successful idea generation. One should take the possible influences of group interaction and teamwork in the organisational innovation or idea sharing process into account. However, according to Paulus & Yang (2000), theoretical and empirical developments suggested conditions where group interaction, may in fact, be beneficial in generating new ideas. Ernst (2002) specified a range of generic characteristics that innovation teams should be sensitive to namely, multi-disciplinarity, a dedicated project leader with knowledge and the specified qualifications, inter-functional communication and co-operation, team autonomy and responsibility for the process. These factors are echoed throughout the literature. Rothwell (1992) referred to them as 'corporate conditions', Chiesa et al., (1996) 'enabling processes' and O'Reilly and Tushman, (1997) 'norms for innovation and change'.

According to Brown & Wyatt (2010), divergent thinking is achieved by having a diverse group of people involved in the process. People that are part of the innovation team should be multidisciplined i.e. architects who have studied psychology, artists with MBAs, or engineers with marketing experience. Such diverse thinkers often demonstrate divergent thinking and are people with the capacity and "esprit de corps" for collaboration across disciplines (Brown & Wyatt, 2010). Teams that are interdisciplinary as suggested, typically make use of a structured ideation or brainstorming process. By taking one provocative question at a time, such teams may generate hundreds of ideas ranging from the absurd to the obvious (Brown & Wyatt, 2010). A draw back, however, is that the teams tend to focus on commonalities rather than on sharing their unique expertise (Stasser, 1999). Group interaction also seems to inhibit the sharing of novel ideas (Diehl & Stroebe, 1987; Paulus & Yang, 2000). Another negative of group work is that individuals may be cautious to share some of their ideas, due to the fear of being negatively judged. Yet another disadvantage of group work could be social loafing or free-riding, as individuals may not feel accountable or be of the belief that their efforts are not needed by the group (Karau & Williams, 1993; Kerr & Bruun, 1983; Paulus & Yang, 2000). Oppositely, there is an advantage of idea generation in groups, and that being that idea-sharing individuals are exposed to more ideas during their session than solitary idea generators. The outcome of this, would mean that there is much potential for cognitive stimulation in groups, as long as group members attend carefully to the shared ideas (Paulus & Yang, 2000).

2.4.3 Leadership

Ernst (2002) mentioned the impact of a dedicated project leader. Brown & Katz (2011) asserted that everyone in the organization should understand the goals as leaders guide the creation process. Leadership influence and behaviours on innovation in an organization, let alone innovation at scale, could be instrumental in having impact. In a recent study Holtzman (2014) wrote that leaders should develop an innovation culture based on trust among employees. People should be made to understand that their ideas are valued, they should be able to trust that it is safe to express those ideas, and together with their managers, oversee risk, collectively. Innovation must be formally integrated into the strategic-management agenda of senior leaders by their organisations (Holtzman, 2014).

Holtzman (2014) found that while innovation is cited as an important driver of growth by senior executives, few of them explicitly lead and manage it. The way in which leaders behave, sends strong signals to employees. This is apparent in most top-down initiatives. Attention and resources are taken away from efforts to achieve short-term performance goals by the inherent association of change when it comes to aspects of innovation. Leaders are required to encourage employees so as to gain trust and win over their hearts and minds. Strong leaders and top executives actively manage and drive innovation, as well as encourage and protect it. Obstacles to successful innovation are due to executives' failure to encourage and be open to to new ideas and risk taking (Holtzman, 2014). Unfortunately organisational members, which includes lower and mid level managers, will continue "business as usual" without the consideration of making improvements or refinements to existing products and services unless their leader exhibits transformational behaviours and triggers them to do so (Jansen et al., 2009). Their study further suggested, that organisations and their leaders need to be cognisant of how transformational and transactional behaviours by their leaders could potentially shape the strategic direction of the company. Their findings further proposed that this is not necessarily a static situation (Jansen et al., 2009). They purported that past research revealed a high correlation between transformational leadership behaviours and contingent reward behaviours, reflecting a likelihood that they exist in different amounts and intensities in the same individuals (Bass, 1998). To master both behaviours, executives must develop "behavioural complexity" or the ability to play competing leadership roles simultaneously (Denison et al., 1995), which is consistent with Quinn's (1988) competing values model.

2.4.4 Environment

The relationship between the types of leadership and types of innovation is significantly influenced by the level of dynamism in the environment (Jansen et al., 2009). With the increasing international spill-overs of knowledge and the race between nations for increased innovativeness, the need for innovation is only amplified. The effect of national culture on the ability to be successfully innovative is an important area of this discussion (Efrat, 2014).

Efrat (2014) more specifically revealed, trust, corruption, civic rights, form of governance, and education as influences on innovation at the national level as indicators that interact with the cultural dimensions identified by Hofstede (2001). It was stated that regardless of the amount of money that is invested in creating innovation, national culture and its influence on either reinforcing or sabotaging innovation, has to be taken into consideration. A complex model which incorporates national as well as firm-level factors to explain entrepreneurship, was similarly proposed by Hayton et al. (2002) (Efrat, 2014).

2.4.5 Mature or Recent Knowledge Innovation

Relying on mature knowledge versus recent knowledge in developing innovations, has been debated by scholars in many articles found in the innovation literature. Some have argued that the use of mature knowledge often leads to successful innovations, as the knowledge has been tested, is already in use and can save on investment and costly errors during the innovation process (Nerkar, 2003). It could also enhance the reliability of new products (Katila, 2002). An innovation that has mature knowledge as foundation is probably more reliable, because the knowledge is likely to have already been put into practice. Even if an innovator is unfamiliar with that knowledge, a greater amount of information about the innovation and its usage is available, which would make it easier and more accessible (Capaldo, et al., 2014).

Others have argued for the use of recent knowledge as building block for innovation, as it enables organisations to adapt its innovations as requirements change, which would inevitably lead to the introduction of new innovations (Eisenhardt, 1989; Sørensen & Stuart, 2000). Innovation built on the most recent knowledge could, however, be deficient in technological ability, particularly in an emerging industry and the innovation users will have to be educated about the innovation and technology before the use thereof. There are positive attributes to using recent knowledge as well, especially where disruptive technologies are developed, and mature knowledge does not exist in the field (Capaldo et al., 2014).

2.4.6 Explorative and Exploitative Innovation

Researchers have argued that exploiting existing competencies and exploring new innovation opportunities is a building block for sustained organisational performance. The notion of exploratory and exploitative innovation (Benner & Tushman, 2003), has been dominating theories on organisational learning, technological innovation, and organisational adaptation of late (Benner & Tushman, 2003; Holmqvist, 2004; Lee, Lee, & Lee, 2003). By engaging in exploratory innovation, organisations traditionally make use of new knowledge in the development of products or services, whereas organisations that use exploitative innovation, build on existing or mature knowledge resources to extend existing products and services.

2.4.7 Ambidexterity

The use of both exploration and exploitation innovation is referred to as an organisation's "ambidexterity" (Jansen, Vera, & Crossan, 2009). Scholars have debated the advantages and disadvantages of pursuing recent versus mature knowledge in developing innovations. Some have argued that the use of recent knowledge to build on, may enable an organisation to adapt its innovations to ever morphing requirements (Eisenhardt, 1989; Sørensen & Stuart, 2000), and so enable the introduction of novel innovations (Capaldo et al., 2014). Others have suggested that successful innovations built on the use of mature knowledge, where the knowledge has already been tested in use, can eliminate errors during the innovation process (Nerkar, 2003) and enhance reliability (Katila, 2002; Capaldo et al., 2014).

2.4.8 Open Innovation

The practice of sourcing external knowledge to contribute to innovation, is a process of an organisation's inbound open innovation activities, where external knowledge flows into the organisation (Chesbrough, Vanhaverbeke, and West 2006; Dahlander and Gann 2010; Brunswicker & Vanhaverbeke, 2013). Examples of inbound and outbound innovation practices would be the purchasing of R&D work from other organisations and participating in the innovation processes of other companies. Burcharth, Knudsen & Søndergaard (2014) identified five types of external knowledge sourcing strategies: (1) minimal searchers, (2) supply-chain searchers, (3) technology-oriented searchers, (4) application-oriented searchers, and (5) full-scope searchers, which represent a distinct mix of interactions with six external sources of innovation. These six sources are: (1) direct customers, (2) indirect

customers, (3) suppliers, (4) universities/research organizations, (5) IPR experts, and (6) network partners (Brunswicker & Vanhaverbeke, 2013).

Table 1: Practical Examples of Inbound and Outbound Open Innovation Practices (Burcharth, Knudsen & Søndergaard, 2014)

Inbound Open Innovation Practices	Outbound Open Innovation Practices
Use of the internet to search for new trends or technology	Active participation in other's innovation projects
Reading of technical magazines	Selling of patents, licenses or know-how
Participation in innovation related fairs or shows	Making of own innovations available to others for free
Purchasing of licenses, patents or know-how	
Use of innovation brokers	
Work with lead users	
Use of information from trade organizations	
Purchase of R&D work from others	

Burcharth et al. (2014) found that open innovation practices were related to employees' attitudes to knowledge. Specifically, that negative attitudes to the acquisition and sharing of knowledge, influences negatively on the extent of use of open innovation practices (the inbound and outbound dimensions respectively).

2.4.9 Design Thinking

According to Brown & Katz (2011), society needs a new approach to innovation that aligns the needs of human beings and the natural world. “Design thinking,” which builds on the ways designers conceptualize their work, can provide that approach and is not limited to designers. Those who use design thinking, access their nascent creative capacities (Brown & Katz, 2011).

IDEO is an innovations company that increasingly uses the “design thinking” approach to innovation, as it places society and the customer or user at the centre of innovation. A human-centred approach is key to balance the perspectives of the users, technology and the organisation. Design thinking entails a brainstorming session, generating as many ideas as possible, the building of connections between ideas, avoiding negative assessments of ideas and then creating prototypes (Eisenmann et al., 2011), as part of the creative process.

Design thinking is not merely a way of confirming or evaluating finished ideas (Brown & Wyatt, 2010).

Brown & Katz (2011) later were of the opinion that design thinkers move through three general phases, each with an intersecting constraint, the phases being “inspiration”, “ideation” and “implementation” and the constraints for each, “feasibility”, “viability” and “desirability”. They added that practicing design thinking, moves an innovator through four “mental states” namely, “divergent thinking”, “convergent thinking”, “analysis” and “synthesis”.

Brown & Katz (2011) believed that the context of innovation is changing and that the opportunity exists to not only design for customers and profit, but to meet the needs of communities. Some social enterprises and organisations may perhaps not be using design thinking consciously due to difficulty in moving past conventional problem solving, but intuitively some aspects of design thinking may already be part of their approach to innovation.

Rather than look at a single example of successful innovation, muster “design thinking to manage an innovation portfolio. Recognize that different types of innovations require different management strategies and investments, and carry different levels of risk” (Brown & Katz, 2011).

2.4.10 Anticipatory Innovation

According to Microsoft’s Bill Gates the average shelf life of any modern technology is 18 months. Ever changing technology and the threat of disruptive technologies demand a future vision from organisations to compete or stay relevant. This is where Anticipatory Competence Building (ACB) is of value in the stable of innovation practices for organisations. Anticipatory Competence Building (ACB) is a fairly new concept and of value for specifically technology companies so as not to fall by the wayside as so many other well-known organisations like Kodak, Nokia, Motorola and Blackberry have.

Hari, et al. (2014) have consolidated six dimensions of ACB through their research into the demise of the above mentioned technology firms:
(1.) Future competence
(2.) Competence obsolescence, which entails the identification and segregation of obsolete competencies and removing them to save on effort and time during the development process.

(3.) Technology research, where core research teams and investment in technology research in collaboration with the partner eco system can improve on competence (Rosen and Jerdee, 1985).
(4.) Market orientation, refers to the development and generation of market intelligence to shape products with a focus on the customer and to introduce these timeously.
(5.) Competence renewal, as defined by Lawrence and Dyer (1983) as the continuous learning of customer demands in anticipation to enable rearranging of competencies to balance differentiation and integration of products.
(6.) Participatory competence building: The overall participation and involvement of all employees that are supported by the latest technology systems to ensure successful competency building for future innovation (Athey and Orth, 1999; Hari et al., 2014).

2.5 Innovation Capabilities within an Organisational Culture

Creating and sustaining innovation capabilities in an organisation is one of the most challenging aspects of innovation for management, since innovation has become a way of survival. The cultural characteristic of innovation in an organisation and the outflow of innovation capabilities, has been dealt with in earlier discussions. The literature on innovation, and innovation capabilities in particular is very broad, yet abundant with different views and perspectives. Many academics have argued that innovation capabilities are in fact a synthesis of capabilities (Parashar and Singh, 2005; Tidd and Bessant, 2009; Breznik & Hisrich, 2014). For the purpose of this study, the researcher refers to a fusion of organisational, dynamic and operational capabilities, as innovation capabilities, since the labelling of innovation capabilities in existing literature seems to be unclear. Then there is also the variant labelling of innovation capabilities by practitioners to consider.

As a point of departure on innovation capabilities, a description and explanation of the characteristics of innovation capabilities found in the literature follows. Hung, Hua, & Tseng (2015) define innovative capability as “a particular kind of capability or competence, referring to the ability of an organization to perform a coordinated set of tasks, utilize organisational resources, for the purpose of achieving product or process innovations”. Innovation capability, as Hii and Neely (2000) argue, is “the potential to generate new ideas, identify new market opportunities and implement marketable innovations by leveraging on existing resources and capabilities”. Lawson and Samson (2001), describe an innovation capability as “the ability to continuously transform knowledge and ideas into new products, processes and systems for the benefit of the firm and its stakeholders” (Breznik & Hisrich, 2014).

Innovation capability is an imperative, which according to Carneiro (2000) depends on the evolution of knowledge. Kogut and Zander (1992) similarly conceptualised innovation capabilities as "the abilities to activate and combine knowledge that reflects in products, services, processes and systems, seen as innovation results" (Breznik & Hisrich, 2014). According to Hung et al. (2015), organizations are more likely to introduce and develop innovations that can utilize their technological capabilities, which are substantial in scale and significance, recognizable at least in the managerial sense and intentionally deployed in various directions of activity (Sydow, Schreyögg & Koch, 2009).

Hari, Subramaniam & Dileep (2014) revealed seven factors that influence the dimensions of Innovation Capacity, where the word "capacity" is interchangeable with "capability", through three case studies: (1.) Concurrent engineering, (2.) Customer research, (3.) Improvisation, (4.) Experimentation, (5.) Creative Potential, (6.) Technology orientation and (7.) Competence management.

Diaz & Faherty (2015) speak of the practicability of using three or more innovation capability dimensions in an organisation. They list four capabilities in their article: (1) technology development capability leading to new products and services, (2) process operations capability, (3) management capability and (4) transaction capability. Their research purports that the implementation of a single capability may lead to success, but that it would need to be supported by at least two other innovation capabilities, which ushers the researcher to Holtzman's (2014) implication for the need of a "portfolio of innovation capabilities" for successful innovation to take place.

The innovation capability in capability literature, however, appears to be a synthesis of the above, as well as operational and dynamic capabilities. &(delineated operational and dynamic capabilities as related to the way in which services have been provided in the past and present, and may influence services that will be provided in the future (Pavitt, 1984; Løwendahl, Revang and Fosstenløkken, 2001; Skjølsvik et al., 2007; Kaplan and Orlikowski, 2013; ..

2.5.1 Dynamic Capabilities

Breznik & Hisrich (2014) stated that innovation capabilities and dynamic capabilities are in fact synonyms due to the fact that both are higher-order capabilities and both "mould and manage" other capabilities. Winter (2003) reported a dynamic capability to be a high-order capability that operates to "extend, modify or create" ordinary capabilities, which is in line with Helfat et al.'s (2007) definition that "dynamic capabilities create, modify and extend other capabilities, including themselves" (Breznik & Hisrich, 2014). They further constructed

that “the notion of dynamic capability could be replaced with the notion of innovation capability”.

According to Samson & Gloet (2013) dynamic capabilities comprise of a combination of management capabilities and resources that cut across various business functions, which include manufacturing, product and process development, research and development, human resources and organisational learning (Teece, Pisano, and Shuen, 1997; Samson & Gloet, 2013). Dynamic capabilities are well suited to the exploration of the complexity of innovation and the many different attributes that may make innovation successful, due to a holistic view. Dynamic capabilities allow for the sensing of opportunities and threats, to seizing opportunities and to maintaining competitive advantage through continuous shaping, reconfiguration and improvement of tangible and intangible resources. An organisation’s dynamic capabilities are thus the source of sustained, ongoing innovation, leading to value generation and higher business performance (Samson & Gloet, 2013). Taking into account that Helfat, Finkelstein, and Mitchell (2007) wrote that “a dynamic capability is the capacity of an organisation to purposefully create, extend, or modify its resource base”, . () concluded that capabilities “may enhance, both renewal (exploration) and modification (exploitation) of service concepts, customer interfaces, service provision systems, and service technologies”. They identified two dynamic capabilities that drive innovation, namely learning and knowledge accumulation, which is grounded in the efficient provision of standardised-provided services, and scaling and expanding the service portfolio, which provides insights into customers’ needs, develops specialised expertise and increases the reputation and legitimacy for solving novel and complex problems.

Table 2: Dynamic Capabilities according to &(

	Capability
1	Learning and Knowledge Accumulation
2	Scaling and Expanding the Service Portfolio

2.5.2 Operational Capabilities

When it comes to operational capabilities, . () identified understanding customer needs, internal learning, formalisation, external and relational learning, integration, and commercialisation as important operational capabilities to take advantage of learning opportunities. These have been theorised to enable an organisation to perform an activity on an ongoing basis using more or less the same techniques on the same scale as support measure for existing products and services for the same customer population (Helfat and Winter, 2011). According to . (), collaboration and interaction with customers, understanding

the customers' needs, and the application of new technology, makes the customer interface more efficient. A formalisation capability, which streamlines and formalises work processes and customer relationships in service provisions, is also of major importance.

Activities that classify as innovation capabilities include co-creation and sharing of knowledge with partners and customers, as well as accessing and recruiting of specialists that can help the service provider in novel problem solving. Factors such as co-creation, knowledge gained from customers, global knowledge sourcing, innovation partnerships, and technological development (OECD 2009), have been identified as business service innovation drivers (.).

Integration and commercialisation capabilities are important to integrate a new service with an existing service portfolio and to put it to target new markets or new customers. Financing ability as operational capability allows for commercialisation as Fabrizio (2009) shows that investments in internal basic research provide learning and search benefits in both the pace of innovation and the importance of the results in inventions. Cohen and Levinthal (1990) have pointed out that investment in R&D activity can be a vehicle for novel organisational learning, helping organisations to develop "absorptive capacity," and preventing strategic inertia and competency traps (Hung, et al., 2015). To quote an article by Weigel & Goffin (2012) where an executive board member at Mönlycke Health Care said that, innovation is about "building the processes and culture to develop customer insights; being disciplined and critical; backing only the projects that you really want to do; and putting enough money into them".

Table 3: Operational Capabilities according to &(

	Capability
1	Understanding Customer Needs
2	Formalization
3	Internal Learning
4	External and Relational Learning
5	Integration
6	Commercialization

2.5.3 Organisational Capabilities

Organisational capabilities generally would indicate what an organisation's abilities or inabilities may be. Although the discussion in the literature about organisational capabilities is rather panoramic, the concept remains somewhat vague. Organisational capabilities are often seen as the abilities of firms to deploy their available resources to achieve an end result (Prahalad and Hamel, 1990; Helfat and Peteraf, 2003). Christensen (1997)

categorised an organisation's capabilities into resources, processes, and values, which are ultimately the control conditions for decision-making. The leveraging of knowledge and the support of innovation by management and employees alike, is an imperative ingredient to organisational capability (Cano and Cano, 2006; Kim and Chang, 2009; Sharkie, 2003). Innovation capability is a critical element in gaining competitive advantage, when taking the importance of organisational capabilities into account (Samson & Gloet, 2013). Samson & Gloet (2013) view innovation capability as "a set of factors that facilitate an innovative organisational culture and climate that leads to innovation performance and business success".

2.6 The Theory of a Portfolio of Innovation Capabilities

The portfolio of innovation capabilities is the focus of this study. We have discussed different thoughts of innovation that may, or may not make out part of such a portfolio, but for an organisation to be innovative, all aspects of a capability must be factored and honed. The benefit to the organisation will be so much greater if it has an ability to develop innovation capabilities successfully and continuously (Holtzman, 2014). It is on the work of Holtzman (2014), and of &(, that this research is based. Holtzman (2014) further wrote that "innovation that is driven by a portfolio of capabilities creates exponential value. Organisations that have developed a culture of continuous innovation are able to develop a portfolio of innovation capabilities and as a result continuously and sometimes radically improve their products, processes, and the competitive landscape of their organisation as a whole". The research attempts to prove that this is in fact the case.

Holtzman (2014) argued that it is absolutely critical that a portfolio of innovation capabilities that contain both disruptive and incremental innovations is developed. "Companies that efficiently innovate manage the process in similar ways. They have a governance structure suitable for innovation" (Holtzman, 2014).

Holtzman's (2014) five key components to innovation portfolio success are:

1. Create an innovation mind-set. Successful companies put innovation at the heart of their business, fostering a culture in which ideas are allowed to flourish.
2. Nurture creativity. There can be a clash of cultures between those responsible for generating innovative ideas and the finance professionals who are guardians of financial integrity and rigor.
3. Prepare the path to profit. Eventually the portfolio of innovations has to have a fruitful outcome.

4. Match the metrics to the appropriate stage of development. Companies must beware of the dangers of trying to put the firm metrics used in business operations around early stage innovation.
5. Take a balanced view on innovation risk. Lastly and perhaps most importantly, experiment, iterate, and learn. A significant mistake companies make all the time is planning new ventures with the same approaches they use for more established businesses (Holtzman, 2014).

Successful innovation attracts competition with the result that an existing advantage will be short lived. “Small strategic innovations applied on top of a radical innovation of the operating model could be sustainable and very difficult to replicate by the competition” (Holtzman, 2014).

It is thus clear that an organisation has to find how or what may keep an advantage fresh. Therefore, a portfolio of innovations consisting of a healthy mix of disruptive and incremental innovations, has to be developed. This will create the internal DNA of innovation, which is extremely difficult to imitate. This new “innovation DNA” can produce a sustainable advantage (Holtzman, 2014).

2.7 Conclusion

This literature review has addressed previous research and work by scholars about the measurement of innovation success, the culture of innovation, innovation practices and innovation capabilities to lead to illumination on the topic of a portfolio of innovation capabilities during the research process.

The works of Amabile, Conti, Coon, Lazenby & Herron (2013), pertaining to the use of the KEYS Creativity Model, Schein’s Model of Organisational Culture and Hofstede’s five Cultural Dimensions, have been delineated in the review to clarify the researcher’s view on the influences of organisational culture on innovation success, and the measurement thereof.

Reviews of innovation practices were made, that could serve as support to reference innovation practices and identify capabilities found in organisations.

Innovation capabilities were addressed as a construct of dynamic and operational capabilities as researched by a host of academics, of which Hari, Subramaniam & Dileep (2014), Diaz & Faherty (2015), and . (), were found to be enlightening.

And finally, the article by Holtzman (2014), where he discusses the portfolio of innovation capabilities as a possible keystone to a DNA of innovation success in organisations, was reviewed as foundation for this research into innovation capabilities and a portfolio of such.

The next section clarifies the purpose of this research study and states the research questions, according to the literature explored in this chapter.

CHAPTER 3: RESEARCH QUESTIONS

3.1 Purpose of the Research

The purpose of this study is not to prove the relevance of existing theories or models of innovation, or to measure innovation success, but rather to extract modern approaches from practical examples found in known contemporary organisations innovationof innovation, and in particular the prevalence of a portfolio of innovation capabilities in doing so. For this to be of suitable relevance the study will have to identify the innovation capabilities used in practice, and distinguish between the the dynamic and static links that innovation capabilities may have to organisational culture and methods or practices of innovation applied. Literature thus far describes innovation capabilities as abstract concepts that fuse with dynamic and operational capabilities. .(“sufficient ss”. This study endeavours to translate the findings in a tangible form, to be of purpose to practitioners and academics, with an end result of creating a model of weighted innovation capabilities, within a portfolio of innovation, that lead to innovation within organisations, relevant to South African companies in particular and possibly others to refer to.

3.2 Research Questions

There are two research questions that this study seeks to find answers to.

Research Question 1

What are the different innovation capabilities used by innovation sectors in South Africa?

If indeed a portfolio of innovation capabilities is identified, it would is of interest to weight the importance of each capability in the innovation system used, so as to compare innovation strategies followed and seek probable commonalities.

Research Question 2

Do they make use of a portfolio of innovation capabilities?

“”Due to the lack of research literature on the subject of a portfolio of innovation capabilities, it is understood that this topic means that it is fairly new. There is no existing model to compare to and .()ss,ss.further research into this as a fresh approach to innovation could be

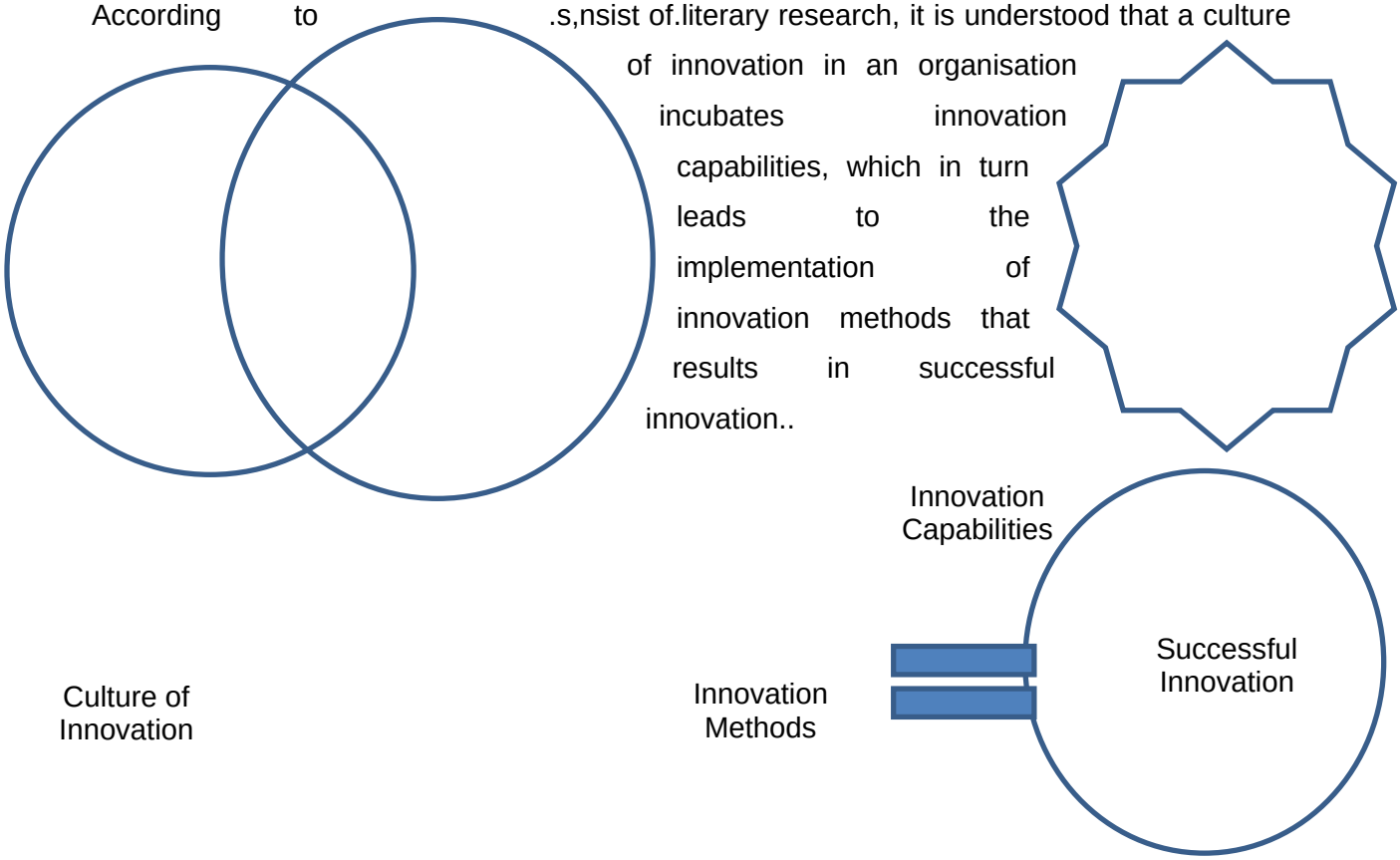
of value to organisations that constantly struggle in developing new products. Taking the organisational culture towards innovation into account, innovation capabilities follow, with the different innovation methodologies within, and the existence and use of more than one capability to deliver innovation, as described in Chapter **Error! Reference source not found.**. Methodologies that the study will seek to identify as present in such a portfolio are described in Chapter 2, and are 1.) Individual creativity, 2.) Group ideation, 3.) Leadership influence, 4.) Environmental influence, 5.) Explorative and exploitative innovation, 6.) Innovation based on mature or recent knowledge, 7.) Ambidexterity, 8.) Open innovation, 9.) Design thinking and 10.) Anticipatory innovation. These will point to which innovation capabilities exist within the organisation and assist in the identification of innovation capabilities present

CHAPTER 4: RESEARCH METHODOLOGY AND DESIGN

4.1 Introduction

This business research project contributes to theory development on the relationship between innovation in organisations where innovation is imperative, and the existence of, in specific, a portfolio of innovation capabilities that enable the outcome of innovation and the success thereof, as well as the identification of the capabilities that form part of such a portfolio.

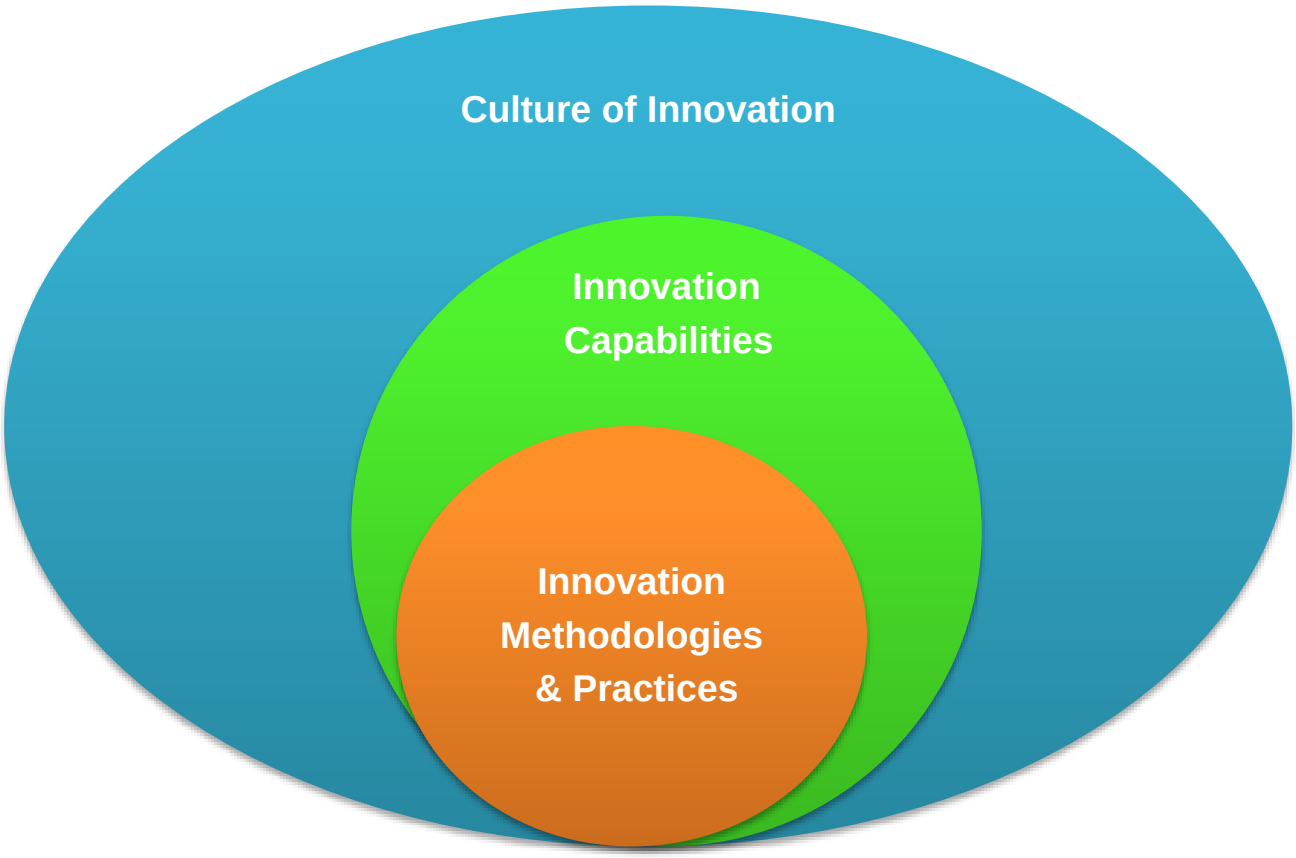
According to .s,nsist of.literary research, it is understood that a culture of innovation in an organisation incubates innovation capabilities, which in turn leads to the implementation of innovation methods that results in successful innovation..



In contrast, the culture of innovation could, however, also be seen as an innovation capability.

It is with this framework that the researcher expected to find the existence of innovation capabilities in the organisations of choice.

Figure 1: Symbiosis of Organisational Culture and Innovation Capabilities



Pending a clear definition of “innovation capabilities” in existing literature, the researcher understands “organisational innovation” to be the successful implementation of creative ideas within an organisation. Within this definition, the ideas in question can be anything from ideas for new products, processes, or services within the organisation’s line of business, to ideas for new procedures or policies within the organisation itself (Amabile,1988). It is thus deduced that innovation capabilities are directly related to the organisational culture of innovation and the practice of innovation methods, as explained in Chapter 2. Without either one, innovation capabilities would not exist.

4.2 Choice of Methodology

To prove the proposition appropriately, an inductive approach, or “post hoc model”, was most suitable, as the starting point of this study is Holtzman’s (2014), yet unproven theory of a portfolio of innovation capabilities. For exploration of the phenomenon in organisations where innovation is successful, the research study used a semi-structured methodology, with subjects from different industries where innovation is paramount.

By following a research methodology, in-line with a qualitative research design, the study aims to identify the presence and use of a portfolio of innovation capabilities (Holtzman,

2014) in organisations where innovation is thriving, as the title of this research project intimates.

The researcher approached this study with the philosophies of both an epistemological pragmatist and interpretivist view. The nature of the design is however of an exploratory study, to first gain an accurate profile of innovation strategies followed by the participating organisations through semi-structured interviews, and then the establishment of the causal relationship between whether a portfolio of innovation capabilities indeed exists, its relationship to the success in innovation in the organisations, and of which capabilities the portfolio consists.

The suitability of the methodology is of utmost importance, as the success of the study relies on an objective assessment of the researcher's interpretation of respondents' opinions and information through face-to-face interviews and discussions with a broad focus. This indicates mono-method qualitative data collection. The research process is both naturalistic and interactive. Further, the analysis of the data collected, hinges on the causal relationship between the two dependant variables pertaining to proof of the different organizations' successful innovation, believed to be effect of the presence and use of a portfolio of innovation capabilities, to establish statistical generalizability or "external validity".

The choice of research strategy is embedded pertaining to the organisation's innovation department and tries to be holistic when involving the CEO's and head of Innovation Team Leaders in interviews, in the search of constant comparison in a cross-sectional time horizon.

4.3 Populations and Sampling

The population suitable for this study is organisations with a history of successful innovation credentials. Although understood that most organisations innovate to ensure success, this is not necessarily the case and the researcher groups the suitable population as the "innovation industry", as the research title reflects. The population can be described as a complete set of group members to be studied (Saunders & Lewis, 2012) and this study has importance to this specific population. A complete list of total population of innovative organisations in South Africa does not exist, therefore the researcher uses non-probability sampling, which can be defined as a variety of sampling techniques for selecting a sample when a complete list of the population is not available (Saunders & Lewis, 2012).

A further in depth description of sampling technique is the purposive sampling method, as (Saunders and Lewis, 2012) defined purposive sampling as a type of non-probability sampling in which the researcher's judgement is used to select the sample members based on a range of possible reasons and premises.

A heterogeneous sampling variety of organisations is used to allow for the research to identify similarities in innovation methods and capabilities in organisations where products and services may differ substantially. The only homogenous aspect of the sample is the area sectors of the different organisations researched.

4.4 Unit of Analysis

Most terms and coding of data emerged as analysis of data commenced. Further terms and coding were derived from Holtzman's (2014) article on a portfolio of innovation capabilities. The researcher coded data after the interview process for fear of unfamiliarity with terms to respondents, and of leading respondents' answers. Thus words and synonyms in reference to innovation capabilities and innovation practises were categorised and coded for frequency analysis.

4.5 Sampling Method and Size

The researcher followed purposive samplingwe of a heterogeneous populationwe to answer the research question and meet the study's objectives, due to accessibility and financial constraints.

Samples of respondents from each entity and in different roles were interviewed; the innovation team leaders, or the CEO's.

Firms that took part in this study were selected based on several criteria.

First, the firm had to be an organisation where innovation happens regularly as a way of creating and implementing new products or services, whether in the financial, insurance, gaming, content or manufacturing sectors. According to the 2014, Annual innovation study,

Discovery, FNB, Sasol, and Kulula, are examples of top innovative South African companies.

Second, these institutions had to be successful in renewing its business over time, that is, have relevant innovative capabilities and third, as there is primarily interest in the relationship between innovation and the existence of a portfolio of innovation capabilities in the innovation process, it was preferable that these organisations are stable and would have staff and facilities dedicated to innovation to make for ease of study.

4.6 Setting and Interviewees

This section gives the reader an idea of the cross-cutting features of the different innovation settings and interviews, as well as their relevance to the research questions.

4.6.1 Interviewee 1 - CEO

This organisation is a global player in the gaming industry, upmarket hotel and vacation accommodation. The CEO of this organisation since 2012, was extremely forthcoming about the current innovation strategy undertaken, and referred to the inevitable disruption of land-based gaming by internet gambling, which is not geography specific, and the innovative measures that his organisation is taking to stay competitive in what is known as their core competence. This organisation has in fact become dependant on technology and actuarial discipline, rather than the entrepreneurial spirit of its founding and subsequent years.

4.6.2 Interviewee 2 - Managing Director

This interviewee is a serial entrepreneur that has led the successful start-up of at least three businesses. The most successful of which, has attracted interest from venture capitalists in Silicon Valley. This company is an online, Cloud-based billing system that allows businesses to easily sell products and services online. They allow for invoicing, statements, automated reconciliation and the processing of payments, to customers, ordering business's products and services online in a white label manner. Innovation at this organisation is entrenched in their daily operation as a technology firm.

4.6.3 Interviewee 3 - CEO

The participant was until recently based in Palo Alto, California, where he also serves on the board of world-renowned venture capitalist firm. He has relocated to Stellenbosch, South Africa, where a South African technology cluster is developing at a rapid pace, as many disruptive start-ups are rooted in that area. His organisation is a South African start-up, which built the first global messaging gateway. Innovation here is geared to keep the organisation relevant in the fast-paced technological sphere and to create adjacent products and services to their existing offering.

4.6.4 Interviewee 4 - CEO

This participating organisation is focused on the aviation industry and is a case study in itself, as it has only had four CEO's in 69 years and 50% of staff have been a part of the organisation for longer than a decade and was founded in 1947. The head office, in an industrial area in Kempton Park, South Africa, is a surprisingly unassuming double-storey face-brick building, especially if one would take the capital intensity of the aviation industry, with $3 Trillion worth of assets into account. Added to this is a global average profit margin of only 1%, year on year, for the past twenty years, according to the CEO. Innovation occurs annually to keep their budget positive, especially in the South African context where the biggest competitor is a state owned enterprise that has become to depend on government bail-outs to stay afloat. Innovation is entrenched in the operations of this organisation, that is ranked amongst the top ten innovative South African companies on the Innovation Index of 2014.

4.6.5 Interviewee 5 - Group Executive: Technology & Strategy

This company represent businesses and operations in the electrical manufacturing field, telecommunications, power electronics, multi-media and information technology sectors. A South African based company with it's global footprint, they created a dual operating system, one system for the day-to-day business where the chief operating officer drives efficiencies, and a chief strategy officer, the interviewee, that heads up a business development function, for new market development, new product development as well as the innovation engine that drives the organic growth at this organisation. Here, innovation is about designing new businesses whether volume or value.

4.6.6 Interviewee 6 - CEO

The interviewee founded two start-ups since 2003, and both have been acquired by a networking solutions giant in 2010. Currently, this is the sixth largest corporate service provider in the South African telecommunications industry, after Telkom, Neotel, MTN Business, Vodacom Business and Internet Solutions. The interviewee was extremely forthcoming about the inorganic method of innovation through acquisition at his organisation. This strategy takes the risk out of the innovation process and saves money, although the company does have an innovation hub where a lot of investment is ploughed into. Differentiation, however, is something that can not be acquired, and this is where the innovation at this organisation comes in to play. Innovation is about differentiating oneself within a corporate market, and developing products that are different, as most everything in the telecommunications space is the same, yet different. Accordingly, slight changes could make a product or solution more attractive than the next one.

4.6.7 Interviewee 7 - Innovation Manager – Innovation and Growth

The interviewee had just started work as Digital Innovation Lead at a new technology consulting firm, where the interview took place. This brought a fresh perspective of the differences between innovation at a global consultancy firm, where the interviewee was the Innovation Manager, and her new position at a technology firm, which has a main focus on technology as part of a much larger family of companies. The main differences being that innovation in the South African consultancy space, is a front runner to the innovation development in their counterpart offices internationally, where South African technological innovation, has an average lag of three years, compared to similar industries worldwide.

Using a consultancy firm as subject for this study was quite different because the organisation sub-segments according to consulting services, auditing services and their tax services, which, according to the interviewee, is a function of their culture and the kind of work that they do. From an auditing and tax services perspective, this organisation is process driven, within the predetermined boxes, as the industry is extremely governed by compliance of the auditing standards. Innovation is stifled by regulatory bodies. Innovation in the consulting side, is very different, and the interviewee confessed that this well-known firm was probably one of the most innovative places she has worked at, in terms of the thinking and what was generated, although there might have been initial difficulty in execution and taking to market.

4.6.8 Interviewee 8 - Head of Strategy Formulation

Another South African company that participated in the study, ranks on the Innovation index of 2014 and is well known for being an innovative company, specifically in the gas/oil/coal and energy industry. This organisation promotes innovation in general and also a culture where its people may come up with new ideas. These are screened at different levels, both from a commercial and an innovative point of view, from where the ideas are parked in relevant silos. According to the interviewee, head of strategy formulation, his company motto states that they are a technology driven company and want to be at the forefront of that technology. His role is to look at how to align research and development to a corporate strategy of innovation, recognising that there is a certain element of current business support that needs to occur where innovation is already taking place. Innovation in new product development and growth strategies for where the organisation foresees disruptive technologies forms part of its innovation strategy, headed up by the interviewee. They have also set up their R&D resources to develop processes for innovation, ten to fifteen years from now, as part of long term innovation strategies. They even have a strategic R&D component in place, which looks at an even longer timeline, where they start building competencies, for “Blue Sky” projects.

4.6.9 Interviewee 9 - Head of Health Research and Development

Yet another South African organization that ranks on the top ten innovative companies on the 2014 Innovation Index, is the financial services and insurance company that participated in this research project. The head of Health Research and Development, was a valuable source of information in the research process, as his organisation believes in a constant iteration of innovation techniques and methods through continuous training and development of it’s research and development team. According to the interviewee, they fortunately recognise the importance of putting real money behind innovation. “They put budgets aside for the people and the processes, and give them exposure to organizations like Ideo, whether in New York or Stanford, or Cape Town or Germany. You have to give that exposure, if you don’t then you are just trying to figure out something that somebody has already figured out.”

4.6.10 Interviewee 10 - Head of Product Growth & Projects

One of the participating banking institutions is arguably the most innovative bank in South Africa and the research interview with their head of Product and Projects in their loans sector, which is responsible for 10% of the organisation’s profit, has iterated why this is the case. Technology is the foremost innovation capability of this organisation, where technological innovation in their product and service offerings to customers has surpassed

their view of supplying only traditional banking requirements as is the case in some of the other banking institutions in South Africa. This organisation is another contender on the Innovation Index. The interviewee's excitement about their innovation culture and leadership was palpable as he explained the federated system within the bank, which allows for innovation agility.

4.6.11 Interviewee 11 - Group Agile Lead

The interviewee has been part of this financial services institution for the past thirteen years and as the Group lead of their Agile programme, has the responsibility to change the face of innovation at this banking giant as we know it. This organisation, although a solid, hasn't had a massive culture of innovation. For a very long time they worked in various silo's and transitioned pieces of products or services from one silo to the other which delayed and hampered innovation. As expected in the banking sector, this is a controlling organisation, bureaucratic, with red tape and regulatory requirements that has stifled competitiveness and the innovation process within the organisation and in the market, compared to the likes of the other participating banking institution. That said, this organisation has been on a drive the past twelve months to convert their innovation to what is known as agile delivery. Agile, being a culture of innovation, creativity, adaptability and flexibility by empowering resources to make quicker innovation decisions.

4.6.12 Interviewee 12 - Product and Innovation Manager

This participating organisation was the first and is the biggest vehicle tracking service in South Africa, and also the biggest stolen vehicle recovery company in the world, with a million customers making use of their products and services. As a technology based company, they put innovation on the backburner to focus on building infrastructure to deal with customer support. Yet they do not have a direct communication link to the individual customer, as they have become a B2B supplier of their technology, mainly to insurance companies. With their new CEO coming on board, the focus has swiftly moved to include innovation, with the future in mind, and a six-point plan for innovation has recently been put in place. The interviewee has been charged with the responsibility to create a culture of innovation and a platform to facilitate bottom up innovation.

4.6.13 Interviewee 13 - Managing Director

This Financial Services and Insurance company is not aligned to any specific insurance institution and brings an objective overview of a wide range of insurance products to customers without any bias to a specific insurer. Typical insurance brokers in SA, called

semi-independent or independent brokers, either work for one insurance company or represent two or three. This participating organisation took the view to provide a true market reflection to a client. Thus, they had to be completely neutral in order to be able to give a client a fair and quick market-related quotation. Their innovation was to develop software that allows multi-quotes of all 22 insurers in live time. This technology in turn, allows for speed to market and a true indication of what the charge or their risk portfolio of a client would be.

4.6.14 Interviewee 14 - Digital Transformation and Innovation Lead

The interviewee is an expert in the field of digital transformation and innovation in the e-platform space. His organisation is synonymous with the publishing and training industry, predominantly in the field of human resources and libraries (academic and public libraries) in Southern Africa. They publish books and have also created an online content delivery platform and hold conferences and workshops pertaining to the materials they have on offer. The interviewee operates on a strategic level within this organisation and his career at here has given him the opportunity to experience the exponential development of reading and conferencing trends due to the influence of disruptive technologies during the past nine years. Innovation at this organisation is mainly of a reactionary nature, according to the trends and needs, set by the human resources departments of Southern African organisations.

4.6.15 Interviewee 15 - Incubation General Manager

As part of a much larger internet solutions organisation, since its inception, the interviewee's contribution to this research project is inadmissible. He currently calls himself the "chief cat herder" of this organisation, which provides Wi-Fi in public spaces nationwide. They have recently acquired MWeb's Wi-Fi assets to form a new company, which will ultimately become the consumer division of the larger organisation. A decade ago this company was one of the frontrunners in innovation in the telecoms space, but as the company grew from 180 employees to over 3000 employees, today, the pace of innovation has slowed due to the sheer size of the company. A concerted effort and focus here, is to find a way to innovate faster and effectively notwithstanding their growth and size. This is where the smaller affiliates like the organisation headed up by our interviewee, bare the torch of innovation.

An observation period per organisation would add to the case studies and the interviews would total fifteen per case, to attain theoretical saturation.

4.7 Measurement Instrument

There are three variables were tested and measured.

a) Company innovation, which will be measured via secondary research into multiple sources in company reports and statistics.

1. The existence of a portfolio of innovation capabilities, measured primarily, through the broad focused interviews with an induction research approach, which involves the development of theory on the grounds of the results of the analysed data (Saunders & Lewis, 2012).
2. And the range or mix of such capabilities that incubate successful innovation, measured in the same extended manner.

4.8 Data Gathering Process

A mono-methods approach was employed, consisting of primary data collection of 15 interviews. per interviewedto gather throughfinally the official semi-structured led 15, A data collection overview is attached as an appendix and on a raw data disc. These primary data interviews provided the study with information on the innovation successes, strategies, frequency and capabilities of the companies. Innovation methods have been documented and found evidence of attributes of innovation culture was of secondary focus, to identify inferred innovation capabilities.

The research interviews were non-standardised as they were conducted face-to-face. The interviewer exercised least direction over the interviews to allow the respondent's opinions to emerge as he or she responded to the questions of the researcher (Saunders, Lewis, &

Thornhill, 2012). The interview questions were similar for respondents, with minor changes pertaining to company position of respondents.

Interviews were then transcribed and cleaned before analysis for “in vivo” codes commenced. Codes were then categorized and categories were themed, to allow for themes to emerge and combinations to be found in a thorough thematic analysis. Findings were compared to gain a theoretical framework.

4.9 Analysis Approach

Engaging with the empirical material and extant research helped to frame the findings to result in answers to the research questions. The research process brought about elements of surprise by the empirical phenomena, and articulates a fairly new theory that resolves the surprise.

The interviews contained a list of open questions to the respondents; all questions had content validity to arrive at proving or disproving the research proposition. Respondents’ answers needed no ranking or rating. The semi-structured questions and answers provided the data needed to examine. Data was thus collected, transcribed, analysed and interpreted interconnected. As mentioned earlier the researcher followed an inductive approach where rules were created after the interviews were transcribed and the data imported into Atlas.ti for coding. Data was therefor categorised and grouped after respondents’ responses and then matched using pattern matching, with the theory that this research project is founded on. The researcher searched for re-occurring and co-occurring codes, quotations, and endeavoured to create network views.

The data collected from the 15 interviews conducted across the sample group was analysed using the content and frequency analysis technique to identify common themes relevant to innovation capabilities. The process required approximately 30-45 minutes of broad-focused interviewing per interviewee and utilised the interview guidelines as presented in Appendix III. This was followed as separate content analysis per interview, by reviewing the recordings, notes and transcriptions of the interviews, captured by the researcher. A dual approach in the codification and identification of the capabilities was followed. First, notions of capabilities found in the literature was used, whether referred to as organisational, dynamic, operational or innovation capabilities. were used as a guideline where matches or concepts understood to be synonymous were categorised. These notions of capabilities are shown in Table 4. The second was to identify innovation practices used by the organisations that identify innovation capabilities, as discussed in Chapter 2 and presented in Table 5.

Table 4: Innovation capabilities according to ..

	Capability
1	Understanding Customer Needs
2	Formalisation
3	Internal Learning
4	External and Relational Learning
5	Integration
6	Commercialisation
7	Learning and Knowledge Accumulation
8	Scaling and Expanding the Service Portfolio

Each concept that pertained to the research questions was captured in Atlas.ti. For each identified concept the number of mentions by each interviewee was captured using frequency analysis, and then rank-ordered from most mentioned to least mentioned.

The proposition is then tested as either positive or negative i.e. evidence of a “portfolio of innovations” and the outcomes thereof, by cross-tabulation analysis to prove the presence of multiple innovation capabilities in the organisations.z

Table 5: Innovation practices

	Innovation Practice
1	Individual Creativity
2	Group Ideation
3	Leadership
4	Environment
5	Mature or Recent Knowledge Innovation
6	Explorative or Exploitative Innovation
7	Ambidexterity
8	Open Innovation
9	Design Thinking
10	Anticipatory Innovation

4.10 Data Reliability and Validity

Data reliability essentially involves the extent to which data collection methods and analysis procedures provide consistency (Saunders & Lewis, 2012). The researcher endeavoured to ensure that reliability was achieved by standardising the interview guideline as far as

possible across the sample group. Minor wording differences and changes in approach to accommodate the different interviewees was followed. This allowed for greater reliability during the data analysis and aggregation process in that all interviewees understood the essence of the questions put to them.

Saunders and Lewis (2012) described data validity as the extent to which data collection methods measure what they were intended to measure and that the research findings are trustworthy. Given the nature of this research, researcher bias was possible, therefore the researcher made every effort to pay attention to the perspectives and language of the interviewees as opposed to own interpretation.

4.11 Research Limitations

No research project is without its limitations. The choices made when designing the research methodology consists of many compromises (Marshall & Rossman, 2006).

The following limitations were identified during this study:

- A qualitative study is exploratory research and with preliminary focus to explore new ideas and should be followed-up with more detailed research (Saunders & Lewis, 2012).
- Due to the exploratory nature of the study there may be researcher bias. The study is subjective and reflects the perspectives of the researcher (Saunders & Lewis, 2012). Thus primary data limitations in data collection may have occurred during the interview process in the form of participant bias.
- The outcome of a non-probability sample cannot be generalised to the entire population of organisations that innovate.
- The quality of the data is dependent on the information obtained from the semi-structured interviews.

The data analysis was conducted based on the researcher's interpretation and perceptions.

Further limitations to the study itself, were accessibility to organisations and certain respondents that were approached to take part in this research project. This meant that initial choices of organisations that may have offered valid study opportunities were replaced by lesser known innovative organisations. No ethical concerns arose, even where organisations were working on disruptive technology during the innovation process, none were mentioned. Concerns of confidentiality, as initially offered by the researcher was waivered by interviewees, once the interview process and type of questions were understood, in favour of lending further credibility and validity to the research project.

CHAPTER 5: RESULTS

5.1 Introduction

This chapter explains the results of the study, which correspond with the research questions posed in Chapter 3. The research sample consisted of fifteen chosen executives, due to their expertise and rich knowledge in the field of innovation and their companies' reputation as innovative organisations within the South African context. The list below provides the designations and company types of the respondents as an initial overview of the interview stage of this research project. Twelve of the fifteen companies that were approached are listed companies and all subscribe technology to their innovation. A wide variety of industry organisations were selected, in line with non-probability sampling methods, to search for and identify common denominators in innovation capabilities, and find or not find the prevalence of a portfolio of innovation capabilities in these organisations.

Table 6: List of respondents in the sample group

	Respondent Designation	Company Type

1	CEO	Gaming Industry
2	Managing Director	Internet Payment
3	CEO	Mobile Gateway
4	CEO	Aviation
5	Group Executive: Technology & Strategy	Technology 1
6	CEO	Network Solutions 1
7	Innovation Manager – Innovation and Growth	Consultancy
8	Head of Strategy Formulation	Energy
9	Head of Health Research and Development	Insurance & Financial Services 1
10	Head of Product Growth & Projects	Banking Industry 1
11	Group Agile Lead	Banking Industry 2
12	Product and Innovation Manager	Technology 2
13	Managing Director	Insurance & Financial Services 2
14	Digital Transformation and Innovation Lead	Publishing
15	Incubation General Manager	Networking Solutions 2

5.2 Analysis of Semi-Structured Interview Data

In the following section, the aggregated research findings are presented. The results are categorically discussed within the constructs of the research questions and are correlated to the responses of the interview questions. All the innovation capability concepts that emerged are illustrated for the complete sample. Data, code sheets and code groupings are presented in Appendix VI.

The results are presented as follows:

Identifying innovation capabilities used in South African context of innovation:

- **Research Question 1 – Interview Questions 1, 2, 3 ,4, 7**
  These questions explored the types of innovation and the understanding of the interviewees' views of innovation capabilities.

Finding if a portfolio of innovation capabilities is present at participating organisations:

- **Research Question 2 – Interview Questions 5, 6**
  The questions broadly explored the mix of innovation capabilities, practices and methodologies.

5.3 Innovation Capabilities in South African Organisations: Results for Research Question 1

What are the different innovation capabilities used by organisations in South Africa?

Research Question 1 sought to determine the types of innovation capabilities used by practitioners of innovation in South African organisations, known for innovation.

The firststep in this study was indeednot to prove the relevance of existing theories or models of innovation, or to measure innovation success, but identify from practical examples found in known contemporary organisations innovationof innovation, and in particular For this to be of suitable relevance the study have to identifies the innovation capabilities used in practice, and distinguishes between the the dynamic and static links that innovation capabilities may have. As literature describes innovation capabilities as abstract concepts that fuse with dynamic and operational capabilities.

But first, innovation capabilities, referred to by the innovation practitioners in the fifteen interviews has to be identified without bias, in order to understand which innovation capabilities would form part of a portfolio of innovation capabilities and therefore to answer Research Question 2.

It was found that the practitioners' terminology differed from that in the academic articles, addressed in Chapter 2. The literature is also not clear about specific labelling of innovation capabilities. It was also found that the practitioners labelled thirteen capabilities of

importance, whether their organisations have these capabilities present or are deficient of these capabilities.

During the interview and data analysis process, the researcher learnt that the practitioners used different terminology from each other and literature. The interviewees had different references for innovation capabilities and fused dynamic and operational capabilities into the notion of innovation capabilities as the literature suggests. Many scholars have presented innovation capability as a synthesis of capabilities (Parashar and Singh, 2005; Tidd and Bessant, 2009; Breznik & Hisrich, 2014). Therefor differences in terminology of all possible capabilities and synonyms for similar concepts were coded in Atlas.ti and then sorted into groups of imperatives that emerged from the interviews as possible capabilities that would ring true to Hung et al's (2015) definition of innovative capability "as a particular kind of capability or competence, referring to the ability of an organisation to perform a coordinated set of tasks, utilise organisational resources, for the purpose of achieving product or process innovations". These coded words were taken at face value and each interview was separately coded within the context of each interviewee's frame of reference pertaining to the subject of innovation capability. Thirteen main capabilities surfaced in the process:

Table 7: The thirteen capabilities that were found during the interview and analysis process in order of frequency.

Rank	Innovation Capability	Frequency
1	Innovation Culture	743
2	Customer Centricity	676
3	Innovation Platform	472
4	Human Capital Capability	380
5	Technological Ability	374
6	Financial Resources	311
7	Future Focus	267
8	Leadership Capability	232
9	Organisational Agility	232
10	Speed Ability	162
11	Communication	161
12	Acquisition Capability	113
13	Knowledge Sharing Activity	82

1. A **culture of innovation**, where innovation is part of the life blood of an organisation, from strategy to operation and people. Frequency of innovation, when successful innovations are implemented more regularly, is grouped into the culture of innovation of the organisation, and so too the "internal focus", where innovation has to happen organically within the organisation, banking on human capital and experience within the company, that was mentioned by some of the interviewees.

2. A **focus on the customer** through offering value products or services, providing solutions, and answering needs.
3. An existing **innovation platform** for innovation where an innovation process is in place for employees to take part in innovation, with the necessary screening and filtering of ideas through to implementation.
4. A **human capital capability**, when innovation is dependant on the employees' participation in the innovation process.
5. A **technological ability**, where organisations are able to insource their technological needs and embrace technology in innovation.
6. **Financial Resources** was clearly mentioned as a capability that eases the process of innovation through investment, budgetary requirements and reward.
7. A **future focus**, where organisations realise the lifespan of innovation and plan ahead for possible disruptive innovations from competitors.
8. A **leadership capability**, where leaders innovate, support innovation and follow low power distance styles to encourage organisational innovation.
9. An **organisational agility**, to differentiate and innovate without size, bureaucracy or red-tape, slowing or depleting the process.
10. A **fast ability** to communicate with clients, quick internal communication or where time to market occurs swiftly and unencumbered.
11. **Communication effectiveness** within the organisation, with supply chain and customers.
12. The ability of **acquisition** of innovation by merging or buying innovative companies, which is referred to as inorganic growth innovation.
13. **Knowledge sharing activity**, where organisations share knowledge with partners or have innovation programmes in place to attract talent from tertiary institutions.

Quotations of interest and of relevance from the interviewees, obtained during the interview process of this research project, have been included in the description of the capabilities that follow.

5.3.1 Innovation Culture

The organisational culture of was indeed cited by each interviewee as an innovation capability and as the most prevalent capability at that. It also certainly proves to be the most important capability as frequency shows, which defends the notion of a symbiosis between organisational culture and innovation capabilities, as depicted in Figure 1, Chapter 3.

Some referred to the culture as the "DNA" of the organisation, as did the interviewee at a Financial Services and Insurance company: "Innovation doesn't only come from the ability to

think out the box, the ability comes from the DNA of the people doing it, … in the 13 years that I have been in this business, the most important thing has not been innovation, the most important thing has been the DNA of the organisation, being able to manage culture, if you can't manage culture you can try and innovate as much as you like, you are not going to get it right, innovation comes from the right culture."

The gaming industry CEO, spoke about the "DNA" and so did the CEO of the internet gateway organisation. The gaming and hotel CEO said: "It's got a DNA of maybe more risk taking than innovation, . . . the culture of the place is to explore, push the boundaries, expand, take a risk, I would say it was probably that more than innovation. That being said, in the land based casino offering we have always been at the cutting edge of what technology has. I say always, I think we went through a phase of probably five to ten years of maybe not staying abreast and one of the things I did when I came in, was to completely change that, so the culture of the place would be to explore and I guess innovate."

The mobile gateway interviewee explained his slightly different view of the DNA of innovation at his organisation: "Within your company's culture, or the commission statements or value statements, the word innovation does not show up, or thought leadership does not show up, I think it would be difficult for you as a rule to now all of a sudden change the DNA of the organization, but in that regard, innovation is a core pillar of our value statement and also how we started this company."

Table 8: Frequency Result of Innovation Culture

Rank	Innovation Culture	Frequency
1	Different	124
2	Culture	94
3	Strategy	87
4	Risk	45
5	Bi-annually	33
6	Experience	32
7	Support	30
8	Basis	29
9	Internal	28
10	Innovation Strategy	26
11	Continuous	24
12	Competition	23
13	Cycle	16
14	Encourage	14
15	Annual	13
15	Bottom Up	13
16	Enable	12
17	All the Time	11
17	Competitive	11
17	DNA	11

17	Award	11
18	Attitude	8
19	Hub	7
19	Engage	7
20	Mindset	6
20	Bonus	6
21	Execute	5
22	Differentiation	4
23	Co-lab	3
23	Failures	3
23	Organic Growth	3
24	Insource	2
25	Ongoing	1
25	Institutional Memory	1

The culture of innovation at an organisation, according to the CEO of an organisation that operates within the aviation industry as well as the technology and strategy group executive, is intertwined with the people and value offering to the customer. Corresponding quotes from the CEO of the aviation company: “I think it’s just inherent, it’s not even the case of having a deliberate strategy, it’s just ingrained in how you run the business, you have to every year figure out how you are going to make a profit next year because it’s not just going to come without innovation so it’s so ingrained in the culture of the company and it’s ingrained right from ground staff. It permeates into every component of the business, so it’s basically in the high level formulation of the budget, from the start, how are we going to actually grow revenue compared to last year and it’s not going to come from an increase in airfare, so we know that, so what are we going to implement that’s going to generate more revenue next year, are we going to change our seating density on the aircraft, are we going to sell new products, are we going to change our pricing strategy, redesign of our pricing structures, are we going to put on board Wi-Fi, are we going to charge extra baggage charges, are we going to connect the distribution of car hire, hotels and cross selling of airfares, are we going to launch a lounge business, with a 3rd party customer in the lounge business to boost revenue, etc. etc. etc.? And every year there has to be a new aspect to generating revenue and innovation, and likewise on the cost side, every year you have to have a new innovation on how you are going to get your costs down because inflation is otherwise going to take you out … you just have to innovate every single year because otherwise your budget will come out negative, there is no alternative, every year you have got to figure out a way to come out with a positive budget and the only way you are going to do that is through innovation.”

He had a very strong view on innovation culture and it was an interesting peek into the stresses of the airline industry. He continued: “You have got to have a culture where people just are trying to really work for the best interest of the business and whenever they find

something they give it to the business, they don't hold it for themselves." With more than 50% of the staff, employed there for over a decade, this organisation must be successful in this approach to an innovation culture. **"**Here you have got to innovate, it's not something different to your everyday job, it's part of your everyday job … it's just an inherent part of the job, it's not a separate capability, I mean that's what makes it work … it's the process of forcing innovation through that person performance management that's going to make the person think about innovation in their job."

As part of a culture of innovation, mentions of innovation strategy and innovation frequency were aggregated as these are both part of how an organisation goes about innovation, and therefore forms part of its culture (Table 8). With a frequency count of 743, an Innovation Culture is by enlarge the most important capability for innovation at an organisation as stated by the practitioners interviewed.

An interesting observation made during the interview process was the influence of doing business in South Africa on innovation in the participating organisations. In the case of the airline company, innovation seems to be reactionary, where innovation occurs annually to keep their budget positive, especially in the South African context where the biggest competitor is the state owned enterprise, SAA, who has become to depend on government bail-outs to stay afloat. Although innovation is constrained by budget, the use of the word "reactionary" is explained by the fact that innovation hinges on constant environmental influences within the South African aviation industry and economic influences such as inflation and fuel costs. If there aren't changes to these, innovation would arguably be less constant and its culture of innovation less dynamic.

The same phenomenon is seen in the gaming industry, where innovation is reactionary to the internet onslaught from the international gaming competitors that could render the interviewee's land based operations obsolete. The publishing sector follows a "reactionary" innovation strategy, by following trends in the South African environment. In the past their innovation was pro-active to stay in step with international developments, but the environment and geography of being in South Africa, dictates otherwise. One of the banking giants interviewed, is in the process of building innovation capabilities to compete with the already innovative competition and at present innovates "reactively" to product offerings of their competitors. Most of these point to the environmental influences of doing business in South Africa, as in all of these cases there are few competitors in the different industry spheres, all vying for a small customer base. These circumstances have a direct influence on the culture of innovation and the innovation strategies followed by these organisations. Table 9 presents the findings of the types of innovation strategies followed by the organisations that took part in this study, influenced by their specific industry environments.

Table 9: Innovation Strategies due to environmental influence

Reactionary Innovation Practices	Pro-active Innovation Practices
Aviation	Networking Solutions 1 & 2
Publishing	Technology 1& 2
Gaming	Mobile Gateway
Banking 2	Consultancy
Insurance & Financial services 2	Banking 1
	Energy
	Internet Payment
	Insurance & Financial Services 1

Another "reactive innovation" company is the second Insurance and Financial Services organisation interviewed: "I think where we are more of a reactionary at the moment, we will see what's coming from the cold face of the business instead of trying to think forward, I think that has a lot to do with us being a lot smaller organisation. We tend to react to client's needs and changes in the market, then to try and plan it, so it is a reaction innovation."

5.3.2 Customer Centricity

Table 10 refers to the frequency analysis of "Customer Centricity". All interviewees, without exception, described the utmost importance of an ability to place the customer first in any innovation process, as innovation ultimately takes place to benefit the customer first, then the company and stakeholders.

The Head of Health Research and Development at one of the participating insurance companies: "In the health business it's a lot about understanding what the needs are of the patient and more recently, the needs of the person who belongs to the medical scheme, and that is what we need to understand. What the health system can and can not do, we need to understand what the healthcare system does well and what it does poorly and its kind of like how can we build products that fit into that and actually address some of the issues as well, so we don't take the approach that the system that we are funding, is what it is, we take more the approach to say that can we build products that actually influence the way that the system works."

A networking solutions company's CEO added to this: "Innovation is around how you differentiate yourself within that corporate market, how do you develop products that is

different, everything in this space is the same but it's also different and it's the slight changes that makes your product more attractive or your solution more attractive than the next one and I think the key here is that we are not in the product space, we are in the solution space and I think that our biggest innovation is the way in which we have developed our product set, in a, I always refer to it as a Lego concept, today you can build a boat, tomorrow you build an aero plane, then you build a train, then you build a car, but you are using the same blocks to build each of those models, so in the same way we have developed our product set like little Lego blocks, which enables us when we get to a customer to build their boats, planes, cars, and trains, each one specific to their needs."

The Group Executive of Technology and Strategy of a a technology company repeated that a focus on customer needs is an organisation's impetus towards innovation: "You can't compromise at the end of the day on the customer side, you have to balance the proposition, but you always have to take risks on many of the commercial products because quite often, especially if you are going to have to try and get more revenue out of a customer, there is always a potential that it's going to backfire and a customer is going to say no this is stupid I am not going to pay for it, so you really have to be very careful that you don't do something that's actually seen by the market as being prejudicial or not customer centred, so it's got to be a product that actually genuinely adds value."
The consultancy firm's interviewee gave her view of customer centricity as an innovation capability: "Innovation capability for me would be the ability to generate things of value to clients that as a result can create value for the business and being able to take it all the way through from ideation to prototyping and then to execution."

The Product and Innovation Manager of another technology based organisation reiterated the sentiments of all other interviewees in saying: "There is so much capability from a customer centric point of view around how do you create significant value to customers but on the other side on technology … I think if you can start getting those two to complement each other, divide that bridge, then opportunity becomes endless."

Table 10: Frequency Result of Customer Centricity

Rank	Customer Centricity	Frequency
1	Product	286
2	Customer	133
3	Service	78
4	Clients	50
5	Solution	38
6	Needs	37
7	Customer Centric	10
7	Product Development	10
8	User	6

9	Customer Experience	5
9	User Experience	5
9	Value Proposition	5
10	Value Added Service	4
11	Customer Needs	3
12	Product Innovation	2
13	Customer Service	1
13	Patient	1
13	Service Innovation	1
13	Value Offering	1

5.3.3 Innovation Platform

A capability that emerged during the interviews, was the importance of having a platform in place for innovation to occur. The innovation platform was an unexpected topic of reference in the process and the practitioners almost concurred on the relevance of such a platform for bottom up innovation and the creation of a communication platform for this to happen. Added to that is the significance of a process where ideas are successfully filtered and implemented.

The airliner's CEO, had a similar point of view: "You can't just simply throw out ideas without a very vigorous process of validating whether the ideas are feasible or not … again it's the culture and the process, because which people come and go doesn't really make a difference, if you come into the company and the process is that we need innovation to deliver next year's profits, the process is that your scorecard is probably going to contain some aspect of delivering on innovation."

A technology expert commented on the innovation platform that he has implemented: "We created something called the ultra innovation system, which is like a Facebook portal but for innovation, where you can go and submit ideas and people comment on it and develop it over time, it's quite a sophisticated system that we have there." An imperative part of such a platform is the innovation strategy that an organisation has, as these go hand in hand. "We see innovation as a multi-dimensional thing, sometimes it's product, sometimes it's go to market strategy, sometimes it's marketing strategy. It's just a different way of looking at things, so there are multiple areas of innovation that we have there and we typically do that at our strategy planning sessions."

Also surprising about the frequency of the Innovation Platform surfacing in the interviews, is that it ranked fourth highest amongst the capabilities spoken of and is presented in Table 11, below.

Table 11: Frequency Result of Innovation Platform

Rank	Innovation Platform	Frequency
1	Idea	231
2	Process	125
3	Innovation Strategy	26
4	Ideation	20
5	Mix	15
6	Gate	14
7	Incubation	12
8	Filter	7
9	Platform	6
10	Ideate	5
11	Filtered	4
12	Idea Generation	3
13	Screened	2
14	Techniques	1
14	Filtration	1

5.3.4 Human Capital Capability

Reference to the words, staff, employees, people, everybody and everyone from the interviews were coded and grouped into a Human Capital Capability, as can be seen in Table 12. It was expected to have had a higher ranking amongst capabilities spoken about, but still was mentioned by each organisation's innovation specialist as an integral part of innovation. As seen in the previous description of the Innovation Culture, it is difficult to separate the people aspect of an organisation from the culture, and that is what one of the the networking solutions organisation's CEO iterates in his view of the human capital at his firm: "…remember, today there are two kinds of customers, the one is the one that you sell to, the other is the one that you employ, if you don't start treating the people that you employ almost as customers, as volunteers, as we call them, treat them like volunteers, because talent, the real talent will choose where they work. You don't choose them, you can't pay them enough money to attract them, as they want to work in an environment that suits their lifestyle, their digital lifestyle, as we know it today and if you are going directly against that, if you're clearly archaic in your thinking they are not going to join you and then you have a problem, because if you are not able to bring in the right talent to innovate, so you can deal with the right kind of customer, you are dying as a breed. Whatever you do in your organisation is ultimately dying, so for me innovation is around understanding that. You think about internal as much as you think about external and the internal is to align your internal systems and processes to be more effective, so when you engage with your customer on the outside, it's easy to deal with you, it's easy to engage with you, and you break down all those traditional red tape barriers that the corporate has."

He went on to say, “You can take a person that has the skills and the ability and even what you would call talent. The talent to me, is the combination of the culture and the ability, that is talent, a talented person, so you can have a talented pianist, that plays amazing piano but he can’t play in a concert because he can’t collaborate with other team leaders. He is a solo pianist, he’s brilliant at it, but who is the one that needs to work in an organisation, the one that you can put the whole orchestra behind and they all play together and it’s a harmony. you can’t just have the talented people who stand out. They are like cowboys; you can’t do anything with them. They are meaningless to your organisation, because they do not have the ability to take that and bring that back to the average person. Remember, most people are average, you need to run an organisation with average people, averagely talented people. You can’t just have the best skill, it’s too expensive, you can’t afford to just have, that’s what Apple is doing, Apple has the best people, they pay them huge salaries, that’s what they do, Google has average people actually, they pay them average salaries but their culture, they are all about culture, 2 very different organisations, both successful, but the sustainability lies within Google, in terms of how they grow, Apple, look at the dip they went through when Steve Jobs passed away, and I am not sure that they are actually going to survive that because the way they innovate today, they are trying to emulate what Steve Jobs did, Google is all about the collective, a collective culture, and that culture, people may go, people may come back, but it’s about their leadership and their real talent and their culture, Google is very good at that, and that’s the sustainable innovation.”

The CEO at the airliner was also clear about the inadmissible part that their employees play in the organisation’s culture and innovation: “…the culture of the people in the airline compared to its competitors, the fact that we do rely heavily on the frontline staff to do the right thing, to take the right decisions and to fix problems so it’s a degree of delegating responsibility and authority and doing that properly so you don’t just get use of the system and that makes all the difference. We do rely on the thousand eight hundred customer facing employees. There is no way that the management can deal with that, other than through the customer facing employees, so you have to operate on the basis of the value chain, that if you look after your employees correctly they look after the customer correctly. You can’t expect employees to deliver any different attitude to the customer than what you deliver to your employees so that is fundamental in our culture.”

Table 12: Frequency Result of Human Capital Capability

Rank	Human Capital Capability	Frequency
1	People	228
2	Staff	44
3	Employee	28
4	Box	20

5	Everybody	18
6	Everyone	16
7	Bottom Up	13
8	Human Capital	11
9	Thinkers	2

The gaming and accommodation company's CEO also spoke about the customer facing employees: "Middle management need to be able to break their shackles and allow their staff, their front line employees who are talking to customers on a daily basis, to ideate and innovate … it's the middle management layer, who have a budget, who have key performance indicators, who work towards their bonus and they are the ones that are scared of failing and that's the bottle neck, because they are the decision makers and they are the ones that actually run the organization. If you can't instil that culture of "it's okay to fail, but you better learn from your failure", innovation is stifled, because executives and CEO's don't innovate, it happens in the company. You can't think out of the box if you have only been in one box, and we had that, and I think of the people that were in that management team three years ago, removing them and bringing in fresh blood from outside has made a huge difference and promoting youngsters from within has brought back energy and innovation."

5.3.5 Technological Ability

An ability to be technologically independent through in house IT departments, or to embrace technological innovation and the benefits of Big Data, Cloud, Digital platforms, etc. was clearly seen as an ability to innovate by the interviewees. Technology in this respect had a mention frequency of 374, which is one of the highest frequency rates among the fifteen areas of discussion. One of the participating banking institution's success in innovation is squarely attributed to its technological ability as stated by their Head of Product Growth and Projects: "I think in today's dynamic market, we are well positioned among a lot of companies with big data and the evolution, the digitisation of the world, the fact that we were positioned as a software company, yonks ago, the fact that we insourced our own IT function, I think that is our core competency and that gives us our innovation leverage."

Table 13: Frequency Result of Technological Ability

Rank	Technological Ability	Frequency
1	Big Data	200
2	Technology	94
3	IT	25
4	Digital	22
5	Software	17
6	Cloud	14

7	Digitisation	2

The interview with the CEO of the gaming organisation, surprisingly, revealed that only 9% of their business is founded on accommodation, 11% on food and beverages and the remaining 80% is gaming, which means that they are a technology dependant organisation and their business is 80% technology based. Not to mention the use of new technology in the accommodation space of their organisation where data of guests is stored for future reference, to make for a better guest experience.

Aspects of a technological capability was mentioned by all the interviewees of all the fifteen companies that took part in this research project. Even the aviation CEO calls technological ability an innovation initiative: "…it's kind of chicken and egg scenario, we didn't put the IT there because we are now going to innovate, as the volume of innovation ebbs and flows IT has to accommodate it, and there are cycles that we go through. Massive new IT platform implementation was an innovation initiative because it was not about the IT platform."
The financial services and insurance industry also have need of technological ability as a Managing Director justified: "We write a lot of our own software where we can and we work with external providers to develop their software, because they obviously have a bigger gain from this." Table 3 provides the findings of the frequency analysis, pertaining to this capability.

5.3.6 Financial Resources

To have access to financial resources to bankroll an innovation process through investment into R&D or talent, was highlighted by the interviewees as a possible success factor in corporate innovation, as the Head of Health Research and Development at an insurance company affirmed: "I can fortunately say that we recognized very early that you have to put real money behind an operation, you have to have a budget for the people and the process and to give the people exposure to organizations like Idea in New York or Stanford, or Cape Town or German. You have to give that exposure. If you don't, then you are just trying to figure out something that somebody has already figured out."

Table 14: Frequency Result of Financial Resources

Rank	Financial Resources	Frequency
1	Money	74
2	Spend	60
3	Research and Development	42
4	Budget	29
4	Capital	29
5	Buy	23
6	Resources	22

7	Investment	12
8	Reward	10
9	Funding	8
10	Incentive	1
10	Financial	1

When organic innovation is the goal, a focus on the future is an imperative to safeguard the investment: “An important point here is how you actually finance the innovation group because if it’s purely business of today, that innovation team will not get through the first five years, it will die and therefore you need a corporate budget which corporate strategies supports.” At the consultancy firm a budget for innovation initiatives was vital: “They also had a pre-defined budget, so there was a certain portion of budget that was allocated to innovation specifically and it was ring-fenced. I think that’s incredibly important because it’s very difficult to create innovation, create valuable new business dreams with nothing to start with”.

5.3.7 Future Focus

Another capability that surfaced, was the ability for an organisation to look ahead, plan and innovate for the future. Innovations have a life cycle and can be undone by disruptive innovations from competitors, or may just date in its value offering to customers. Organisations need to invest and forecast so as to stay relevant. Differentiation could be key, according to one of the CEO’s: “Your differentiation today, may last you for a year, then it’s old news, it’s time to re-invent that, time to re-think that, so over the 13 years or so that we have been going, we have re-invented our product set ten times.” And another CEO explained why: “most companies live from quarter to quarter, earnings report to earnings report and at the end of the day your existing clients call the shots. So, if you are looking at new customer segments and new markets, those don’t really have a voice in the day to day realities of the business.”

The Head of Technology and Strategy understood the importance of an organisation to have a future focus and the cost involved: “You have to save money closest, to spend on your future and don’t see innovation as an expense or R&D, see it as an investment in your future.”

Table 15: Frequency Result of Future Focus

Rank	Future Focus	Frequency
1	Ten	193
2	Trends	26
3	Future	20
4	Disruptive	14

5	in 5 years	5
6	Long Term	2
6	Look Forward	2
6	Horizon 1	2
6	Horizon 3	2
7	Forecast	1

Some organisations are successful in operating in an opposite manner by being reactionary innovators. The participating publishing firm is such an organisation and innovate according to current needs and trends in the South African HR sphere.

Another such company is one of the insurance and financial services companies that took part in this study: “I think where we are more of a reactionary at the moment, we will see what’s coming from the cold face of the business instead of trying to think forward, I think that has a lot to do with us being a lot smaller organization. We tend to react to client’s needs and changes in the market, then to try and plan it, so it is a reaction innovation.”

5.3.8 Leadership Capability

Leadership came to the fore as an important ingredient for innovation and was remarked upon by most of the interviewees. The results of this frequency analysis is depicted in Table 6. The interviewee from the consultancy firm elaborated on leadership at the company and the importance of investment in innovation: “Leadership influence is both positive and negative, so it was interesting because we saw both paradigms, if you have an incredibly strong leader that’s able to hold the vision. Say if you can’t get through the door, then break down the wall to create a window and find a different way of doing it, and who is able to be un-wavered by the noise that happens and keeps holding that team’s vision and inspiring and creating that enthusiasm, that creates that cultish behaviour, which is so important for innovation in terms of attracting the most, actually the top talent in general. And also, what’s interesting, I found about that innovation isn’t for everyone and I know this isn’t on the topic of leadership but there are some incredibly smart consultants that were terrified at the concept of going to an innovation project because of the fact that although the process is defined, it’s incredibly volatile, from the chaos comes the clarity, and that chaos side of things. If you are not a person that’s comfortable with constant ambiguity and changing paradigms, it can be extremely stressful in certain ways, so from a leadership perspective it’s incredibly important to have the right visionaries in place. That said, there is also a certain amount of lip service that can be paid towards innovation but really being able to plough the way forward and hold the vision and put the right kind of money in it at the right stages, there is an art to it and there aren’t many people that are able to do that. There are many people that will say they do it, but whether they do it in actual fact is a very different story.”

Table 16: Frequency Result of Leadership Capability

Rank	Leadership Capability	Frequency
1	Leader	54
2	Leadership	40
3	CEO	37
4	Executive	26
5	Flat	17
5	Close	17
6	EXCO	16
7	Top Down	7
8	Directors	4
8	Power Distance	4
9	Managers	3
10	Heads	2
10	Hierarchical Structures	2
11	Flat Structures	1
11	Guys at the Top	1
12	Buy-in	1

5.3.9 Organisational Agility

During the interview with the CEO of another technology based company, he spoke about the importance of an organisation's agility to foster an ability to innovate: "The bigger you become, the more processes you have, the more decentralised you become, the harder it is for you to know what the left hand is doing and also be in touch with your clients. It may change now with big data, as a customer has more information at his/her fingertips, but in general I think the large organisations really struggle with staying close to the market. Also, the larger the organisation is, the more you have at stake and at risk, so start-ups have got nothing to lose so they can build something on block-chain and not worry too much about the full element that may exist, they have nothing to lose but a large bank can't go do that, too much at risk".

It is for this reason that one of the banking institutions is implementing an Agile delivery system of innovation. With their Group Agile Lead also, having spoken about the importance of speed in the process, it would be safe to merge the ability for speedy communication, delivery and so forth with an ability of an organisation to be agile. Where an ability for speed had a mention frequency of 162 and agility a frequency of 232, as presented in Table 17, a repositioning of the two under Organisational Agility would see the importance of such, rise to a frequency of 394.

Table 17: Frequency Result of Organisational Agility

Rank	Organisational Agility	Frequency
1	Change	85

2	Agile	28
3	Fast	17
4	Innovation Capability	15
5	Agility	14
5	Silo	14
6	Operational Capability	12
7	Leverage	11
8	Faster	9
8	Adapt	9
9	Dynamic Capability	7
10	Flexible	5
10	Scale	5
11	Sub-segment	1

The polychronic organisation also surfaced as a form of agility within an organisation to innovate without interference. According to the another interviewee, his organisation has two types of businesses, namely, value businesses and volume businesses. The value business is where intellectual properties are designed, and the volume businesses, in which they mainly re-sell. Innovation happens in the value business and accountability is to the CEO, not to the COO, with separate budgeting, and a separate facility created, that looks to the business of the future. In other words, the dual operating system culminates in systems of today funding business of the future.

5.3.10 Speed Ability

An ability to innovate, communicate or differentiate at pace was another capability that was spoken about in the interview process. It was found that this was the tenth most mentioned topic, whether to put a minimum viable product to market, without spending time to first complete the product for fear of competition debut, or lags in decision-making processes. An ability to trim time constraints was a concern in many of the companies concerned. Table 4 shows the frequency analysis of the ability for speed.

Table 18: Frequency Result of Speed Ability

Rank	Speed Ability	Frequency
1	Quick	48
2	Quickly	34
3	Decision	14
3	Size	14
4	Slow	10
5	Speed	9
6	Rapid	8
7	Gap	6
8	Lag	5

8	Minimum Viable	5
8	Tomorrow	5
9	Time to Market	3
10	Time-Frame	1

The interviewee from the consultancy firm lamented the slow pace of innovation at the company and compared it to the faster technology industries: "…the pace wasn't that quick and from a services perspective what you can do, because a lot of innovation is fuelled by technology, largely it's driven by Moore's law and all that applies, but because there is so much pressure from a technology based side of things, you have got to innovate very rapidly and you have got to be thinking about the next things, with that said even so from a global, it was almost like the reverse was true, this was what was interesting. From their perspective, South Africa led the charge in terms of innovation and was getting it right very quickly although the US firm, because it had a hell of a lot more money to spend, was doing a lot more in the technology space around innovation and the South African was doing more with what they had…"

The Head of Technology and Strategy at the technology organisation described how they have changed the innovation process to counter time consuming communication and decision-making practices: "…they have got access to very senior management, very quickly, as promises for this program to make it work and to make sure the time doesn't delay that things go out, that's why we created a hub over here for business development."

The interviewee at one of the financial services companies explained how they achieve speed agility to innovate through the organisational structure: "We have kept the structure in the organization very flat, we only have 2 levels, we have general staff, one level of management and then directors. We use that so that we can have a very quick feedback loop in terms of what the clients on the ground are finding in terms of an innovation space, so the people in the cold face as it were, who are facing clients every day and they can give a feedback to say if we were to change this system or if we feel that this system needs to be innovated. It allows us to react very quickly to customer needs and what we can do then is develop systems that allow us to be the leading brokerage in SA instead of trying to catch up".

A banking institution's interviewee iterated: "I will give you some examples in capability, one could be speed delivery, … conception of an idea, to bring it to the market, that time frame is very important, so the faster the better so that's definitely a capability."

5.3.11 Communication

The ability to communicate effectively and efficiently, internally (employees, supply chain) or externally (customers), was cited as a capability that benefits successful innovation, especially with a view to creating solutions for customers' problems or whether it be the supply chain or value chain. Within an organisation, streamlined communication between departments or business units and decision makers is vital for the survival of fresh innovative initiatives. The Group Agile Lead of a bank called this a "communications platform".

On a creative level, the Innovation Manager from the consultancy firm described how they had encouraged communication between employees: "The building that was set up to facilitate chance interactions between people, so the entire building is constructed so that you can see where people are walking all the time, so you can see people walking across the walkways. If you see someone you want to go chat to, you can go grab them, they have coffee on every level but the good coffee is only downstairs and around there is a whole bunch of comfy chairs where you sit. Often you will find people bumping into each other around the coffee machine and just having these conversations and finding out what each other is doing and finding spots where they can create an even better value proposition and give different perspectives. It gives the client more value. That was very interesting."

Table 19: Frequency Result of Communication

Rank	Communication	Frequency
1	Daily	100
2	Communication	26
3	Feedback	10
4	Tomorrow	5
4	Weekly	5
4	Communicate	5
5	Disconnect	3
5	Monthly	3
6	Responsive	2
7	Miscommunication	1
7	Relay	1

5.3.12 Acquisition Capability

Acquiring other businesses as a form of inorganic innovation had more frequency in mentions by the interviewees, than that by the interviewee from the publishing firm. Bigger companies would typically minimise risk and save on costs by opting to acquire already innovative entities or start-ups, rather than follow the route of organic innovation. They still refer to it as innovation, albeit innovation in business modelling. Table 8 presents the results at a frequency level of 113.

The CEO at a networking solutions company explained: “When I innovate I am not going to do something that is completely out of the realm of the telecom space that I operate in, so it will be within the space. I wouldn’t go out and innovate something in a completely different field, unless there is a specific desire by the organisation to be in that space, and then again, here we look at, let’s say for instance what we want to be in, and I will use an example, pre-paid electricity or smart metering, that kind of thing. That’s a hard topic today, smart metering, because municipalities have difficulty in that space. We would find it much easier to go and look for a company that is brilliant at smart metering, than to develop smart metering from the ground up. I’m sure you can understand the logic behind that from our perspective. So, in that space you get innovation by acquisition, that’s what I would call it, so yes it’s not as if we are stagnant as a group, we’re definitely not stagnant to say this is the block that we live in and this is all we do, but we do tend to acquire more of that innovation than build it ourselves…”

The Head of Strategy Formulation at an energy company said almost the same: “We do that as well and I think the company of the past did not really support such a model but where we are going, and I think there are some examples of the past, if I think about it now, but we do at times do acquisitions and we call it inorganic growth. To reach our future growth targets, we do see that we will have to do inorganic growth and do acquisitions, partnerships and collaborations and even collaborations with perhaps, start-up companies. Where we do have a position on the raw material side, supplying it to those companies in niche product areas and as I talk to you our focus really going forward is on product adjacencies, we don’t want to spread ourselves too thin going forward. So, if there is a company falling outside of our product focus, for example in a technology adjacency or a skills adjacency, we will look at it selectively, we will support those companies and we will sell for example raw material to them. It will be selling the resource and then once they make the breakthrough in terms of that they need money for international expansion, and they come to us and ask us for funding for the expansion, we will look at our equity stake in such a company or an acquisition.”

There is a downside to this type of innovation strategy and one of the technology companies’ interviewee explained that they have had burnt their fingers on occasion and that the risk is not necessarily completely avoided: “In some cases that acquisition you overpay for, because you thought you got more than what you had, and then it doesn’t work. You have to write it off. It’s very painful when you have to start writing off capital that you used from the shareholders and you have to go tell them you gave me some money, I couldn’t create any value for you and I lost your money. Just going to the bank and saying, can you lend me some money, I can give you 4% back, but I lost your capital in the process, so for us it’s a

very tough one, but sometimes you have to do that. Therefore, you have to be very clever in your due diligence."

There is a form of Knowledge Sharing that takes place during the acquisition process, but within less risky confines and with a surer outcome of ownership of the knowledge shared or acquired. It is therefore probably wise to group the Acquisition Ability, together with Knowledge Sharing activity, as was done with the Speed Ability and Organisational Agility.

Table 20: Frequency Result of Acquisition Capability

Rank	Acquisition Capability	Frequency
1	Acquired	82
2	Bought	16
3	Acquisition	13
4	Inorganic Growth	2

5.3.13 Knowledge Sharing Activity

The ability to share knowledge, collaborate and make use of partners, was an interesting finding in the South African context, as many companies dare not make use of this innovation capability due to the small market and competition within. In aviation for example, there are two main competitors, one being a state owned enterprise (SOE). They would, however share knowledge with international competitors, but mainly to save on innovation costs, cut risk and learn from mistakes made elsewhere, as the airline CEO explained: "…it's very much entrepreneurial, trade off the risk of how the customer is going to react to this pricing model compared to that, is it going to enhance revenue, is it going to dilute revenue, etc. and again looking a lot outside the business to what has been done by other airlines around the world, one doesn't always have to reinvent the wheel on a global level to get the best, and we don't like being guinea pigs on anything".

This is a classic example of the use of exploitative innovation. One could perhaps even use the airliner and gaming organisation as examples of using inbound open innovation as innovation practices in their organisations. The CEO of the gaming firm had a similar view, with only one real competitor in the South African land based market: "I got in touch immediately with other people in the world using that technology, people I have never met, that are very receptive to my organisation, by email. Do you mind if we have a catch up call on the following? It's amazing how quick people are to respond and certainly, my attitude is not to be arrogant. I think if you go in with a, "I would love to learn, what do you recommend?", if you go in with a humble approach, there are very few people that aren't prepared to share what they know and in a world of technology, I am definitely not arrogant,

you want to learn from other people's mistakes and globally, because it's a global product. Globally people have learnt lessons and globally they are very willing to share, such a small world, it's not just a cliché."

Knowledge sharing was singled out by seven companies as something that they actually do, despite the stringent competitive environment in South Africa. The total frequency of words that fell in the sphere of Knowledge sharing activity was 82, as seen in the table below.

Table 21: Frequency Result of Knowledge Sharing Activity

Rank	Knowledge Sharing Activity	Frequency
1	Partners	19
2	Sharing	15
3	Partnership	11
3	External	11
4	Collaboration	10
5	Knowledge Sharing	9
6	Outsource	7

5.4 Conclusion of Results for Research Question 1

The following eleven capabilities, presented in Table 5, have been finalised as innovation capabilities of relevance according to the inductive approach taken by the researcher in the analysis of the data presented. These have been referred to by the sample group of innovation experts, identified and labelled by the researcher according to a frequency ranking, after the coding process.

A culture of Innovation was the most frequently named innovation capability, which leads to being the most important capability for successful innovation and is ranked first on the table below. Customer Centricity is a capability identified by most interviewees as an important pillar of innovation, second to a culture of innovation and has proven its standing by having been mentioned 676 times.

An ability to acquire innovation through the acquisition of external organisations, also known as inorganic innovation, is understood by the researcher to have financial implications, as explained by the technology and strategy group executive of one of the participating companies. It is therefor seen as a means of innovation through having financial resources available as a capability and has thus been merged with Financial Resources Capability on Table 19, below. The speed ability spoken of by the practitioners has also been consolidated with Organisational Agility, as all elements tested and analysed for, are notions of agility. The final 11 capabilities found to be present or seen as valuable capabilities for innovation in South African organisations are presented in Table 19.

Table 22: Frequency Result of Innovation Capabilities

Rank	Innovation Capability	Frequency
1	Innovation Culture	743
2	Customer Centricity	676
3	Innovation Platform	472
4	Organisational Agility	394
5	Human Capital Capability	380
6	Technological Ability	374
7	Financial Resources	311
8	Future Focus	267
9	Leadership Capability	232
10	Knowledge Sharing	195
11	Communication	161

5.5 A Portfolio of Innovation capabilities in South African Organisations: Results for Research Question 2

Do they make use of a portfolio of innovation capabilities?

is projectithe presence of a portfolio of innovation capabilities in doing so. This means that the researcher set out to identify a range of innovation capabilities used by South African innovation organisations in conjunction, that may lead to successful innovation over all. Research Question 1 was answered and the Innovation Capabilities are presented in Table 19.

A cross-tabulation (Appendix V) of the eleven innovation capabilities presented and the innovation capabilities in use by the fifteen companies that were interviewed, was done to ascertain if such a portfolio existed. An innovation capability prevalence of the different capabilities in companies, is shown in Figure 2.

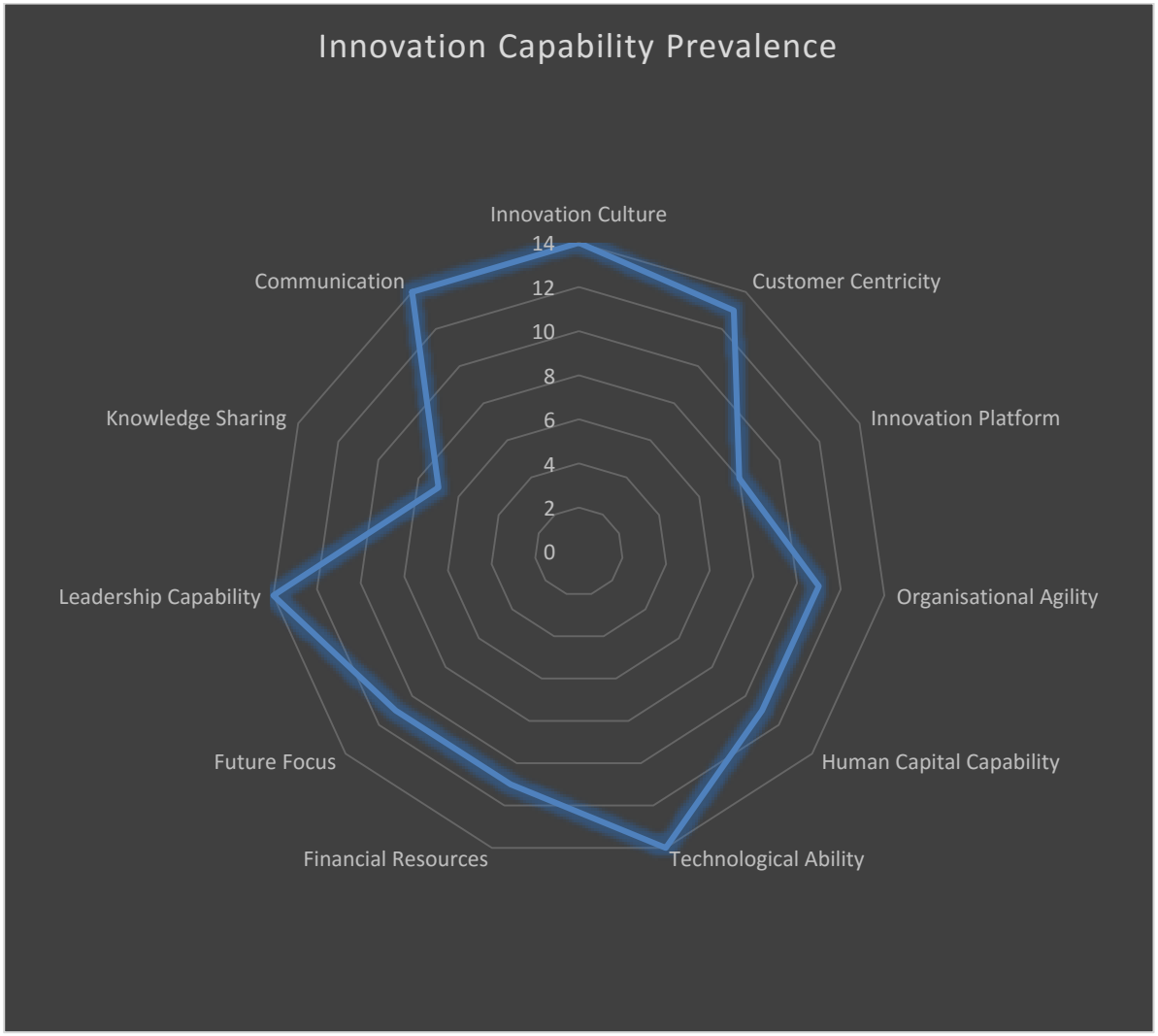
A Culture of Innovation, efficient Communication, a Leadership and Technological Ability, are most prevalent, being a capability at 14 of the 15 organisations that took part in the study. Customer Centricity was present in 13 companies. Organisational Agility, Human Capital Ability, Financial Resources and a Future Focus, were cited as present capabilities within 11 companies. An existing Innovation Platform and Knowledge Sharing were present in eight and seven of the interviewees' organisations, respectively.

Table 23: Number of organisational use of capabilities

	Innovation Capability	Organisational presence
1.	Innovation Culture	14
2.	Customer Centricity	13
3.	Innovation Platform	8
4.	Organisational Agility	11
5.	Human Capital Capability	11
6.	Technological Ability	14
7.	Financial Resources	11
8.	Future Focus	11
9.	Leadership Capability	14
10.	Knowledge Sharing	7
11.	Communication	14

The radar chart below in Figure 2, reflects the presence of the innovation capabilities in South African organisations visually. Accordingly, the typical portfolio of innovation capabilities would consist of four main capabilities, namely an Innovation Culture, a Technological ability, a Leadership Capability and an ability to communicate effectively internally and externally. The only organisation that lacked three of the four capabilities, was one of the banking institutions, as they currently are in the process of developing and building innovation capabilities. They do, however, have a portfolio of six other innovation capabilities at their disposal. Expansion of such a portfolio would include Customer Centricity, Organisational Agility, Human Capital, Financial Resources and a Future Focus, to nine innovation capabilities most likely to be found in South African Organisations.

Figure 2: Innovation Capabilities' Prevalence in Companies



Further to this, the researcher was interested to find the number of Innovation Capabilities per organisation through the earlier cross-tabulation. The results show that one of the networking solutions organisations, one of the participating banking institutions, an insurance company and a technology firm, all have a total of 11 Innovation Capabilities present in their portfolio of Innovation Capabilities. The gaming and hotel organisation, and another technology firm, each has a portfolio of ten capabilities. The least number of capabilities found at an organisation, is six, as presented in Table 18 and shown in a visual depiction in the radar graph, Figure 3.

Table 24: Innovation Capabilities per Company Portfolio

	Organisation Type	Capabilities in portfolio
1.	Gaming Industry	10
2.	Internet Payment	8
3.	Mobile Gateway	8

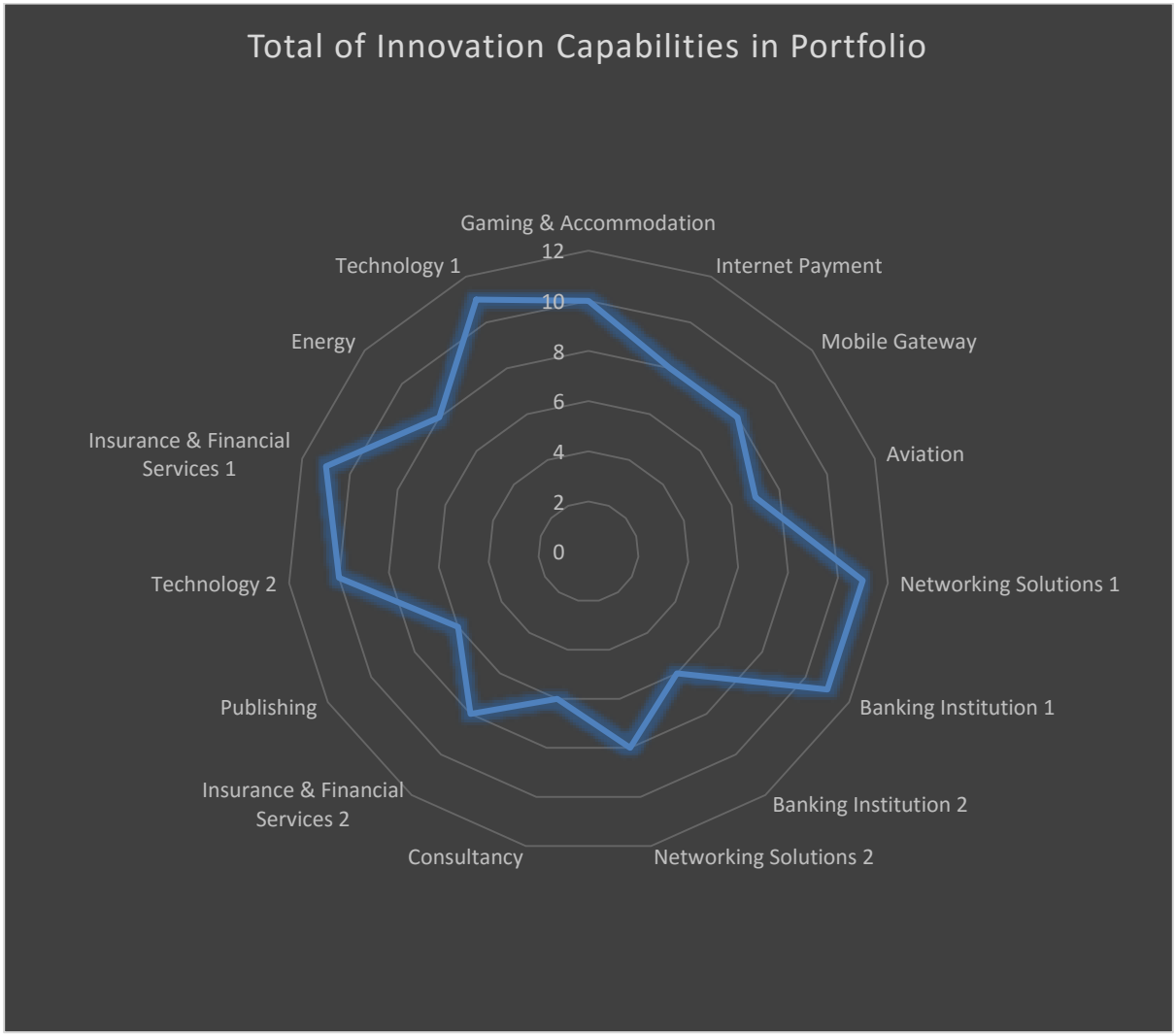
4.	**Aviation**	**7**
5.	**Networking Solutions 1**	**11**
6.	**Banking Institution 1**	**11**
7.	**Banking Institution 2**	**6**
8.	**Networking Solutions 2**	**8**
9.	**Consultancy Firm**	**6**
10.	**Insurance & Financial Services 2**	**8**
11.	**Publishing**	**6**
12.	**Technology 2**	**10**
13.	**Insurance & Financial Services 1**	**11**
14.	**Energy**	**8**
15.	**Technology 1**	**11**

5.6 Conclusion of Results for Research Question 2

It is clear that a portfolio of innovation capabilities does exist in South African organisations, with the minimum amount of capabilities in such a portfolio being six capabilities at the publishing firm. Four of the companies interviewed have a portfolio of innovation capabilities that consists of 11 capabilities.

It is interesting to note that where organisations lack the Financial Resource capability, they would all lack a Communication Capability and in some cases an Innovation Platform too.

Figure 3: Radar depiction of Capabilities per Portfolio



5.7 Conclusion

The results from the interview questions support the current constructs found in the existing literature of (Holtzman 2014), that organisations do indeed have a portfolio of innovation capabilities, and contribute to new knowledge regarding the identification and labelling of a range of innovation capabilities prevalent to South African Innovative companies, not clearly distinguished by existing literature. In Chapter 6, the results are comprehensively discussed.

CHAPTER 6: DISCUSSION OF RESULTS

6.1 Introduction

In Chapter 6 the research findings are comprehensively discussed and are related to the literature that was reviewed in Chapter 2. This chapter provides insights into the findings as investigated through the semi-structured interview questions utilised in this study. The data attained answers for the research questions that were gathered from a process of 15 semi-structured interviews across the sample group, namely innovation experts and executives from 12 listed and three non-listed companies, known for innovation. The data coding and analysis allowed for the aggregation and refinement of data, providing insights into the innovation capabilities utilised and the existence of a portfolio of such capabilities.

Whilst labelling of innovation capabilities are unclear in the current literature, the research results discussed in this chapter contribute to an improved understanding of the executives' and innovation practitioners' experience and labelling of innovation capabilities, specifically of use in the South African innovation industry. The relevance of the results and the existing literature in context with this study are discussed in the next section.

6.2 Discussion of Results for Research Question 1

What are the different innovation capabilities used by innovation sectors in South Africa?

The study's results identified the following eleven innovation capabilities as those of relevance to South African innovation organisations.

1. Innovation Culture
2. Customer Centricity
3. Innovation Platform
4. Organisational Agility
5. Human Capital
6. Technological Ability
7. Financial Resources
8. Future Focus
9. Leadership

10. Knowledge Sharing

11. Communication

It is on the work of Holtzman (2014) and .(), that this research is based. Holtzman (2014) wrote that “innovation that is driven by a portfolio of capabilities creates exponential value. Organisations that have developed a culture of continuous innovation are able to develop a portfolio of innovation capabilities and as a result continuously and sometimes radically improve their products, processes, and the competitive landscape of their organisation as a whole”. The main aim of this study is to determine whether a portfolio of innovation capabilities exists in South African companies. The further aim was not to prove the relevance of existing theories or models of innovation, or to measure innovation success, but rather to extract modern approaches from practical examples found in known contemporary organisations innovation, which pertains to the first research questionof innovation, and in particular For this to be of suitable relevance the study have to identifies the innovation capabilities used in practice, and distinguishes between the the dynamic and static links that innovation capabilities may have to organisational culture and methods or practices of innovation applied.

The goal of the first research question was the identification of the relevant capabilities that could form part of a portfolio of capabilities, and to correlate the findings with that in the literature. The capabilities according to .(), expected to surface from the interview process were:

1. D.
2.S
3. U
4. I
5. Fs
6. E
7. I
8. Cs
9. L
10. S

With the different innovation methodologies within innovation capabilities as a whole, the study followed a dual approach and also sought to identify as present,described in Chapter 2, and a 1.) Individual creativity, 2.) Group ideation, 3.) Leadership influence, 4.) Environmental influence, 5.) Explorative and exploitative innovation, 6.) Innovation based on mature or recent knowledge, 7.) Ambidexterity, 8.) Open innovation, 9.) Design thinking and 10.) Anticipatory innovation. The purpose of studying innovation practices was that these

have pointedwill to which innovation capabilities exist within the organisation as explained in Chapter 4. According to .“s,nsist of“.).

The Ven diagrams used in this chapter, depict the confluence of the capabilities discussed in the literature, the innovation practices and the innovation capabilities, identified during the research process, to substantiate the relevance thereof.

The question in the interview schedule, “Which innovation methods do you apply?”, received ill-defined responses from each and every interviewee. No answers corresponded clearly with the methodologies quoted above. The replies ranged from a mix of the above stated methodologies, to bottom up and top down. The interviewee at one of the insurance and financial services organisations’ answer was: “We spend a lot of time before we would have, for lack of a better word, a brainstorm or an ideation session, we spend a lot of time thinking in terms of who should be at that session, what the ground rules are and what the questions are we going to be asking so we spend a lot of time framing those questions but once we have the actual session it’s a bit of anything goes, but we are constantly trying to find new ways.”

The Managing Director of the internet payment organisation’s reply was: “…you cannot be taught innovation and innovation is not a set procedure or steps that you can follow, it is the ability to make links and connections within yourself and within a team in order to generate new ideas and a lot of it has to do with if you are using the right side of your brain, try using your left and if you are using the left, try using the right but you have to use your entire brain to come up with something new and innovative that would actually work in practice.”

Correlations can, however, be found if the practitioners’ responses are deciphered and compared to the results of innovation capabilities found. Matching the interviewees views of innovation capabilities with the notions of capabilities expressed by .() and comparing with the innovation practices discussed in Chapter 2.

Figure 4: Chart of Innovation Capability according to frequencies

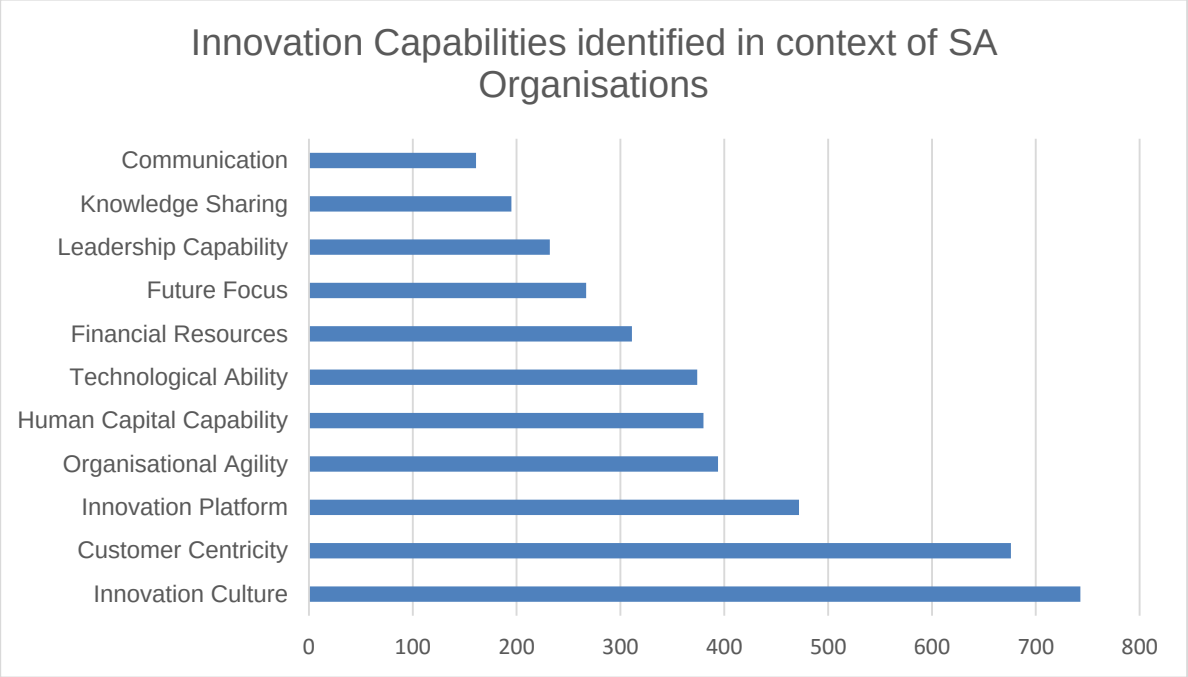


Figure 4 presents the innovation capabilities identified according to the frequency analysis. A separate discussion of each capability found, follows.

6.2.1 Innovation Culture

The importance of a culture of innovation was mentioned by all interviewees. Each reiterated that a culture of innovation is a capability of innovation, but most importantly that without a culture of innovation, neither of the other innovation capabilities would be possible to incubate. .An innovation culture, should it be seen as an innovation capability, is thus also an enabler of innovation. literary researcA culture of innovation in an organisation incubates innovation capabilities, which in turn leads to the implementation of innovation methods that results in successful innovation.F 3,A culture of innovation is central to innovation capabilities in the organisation, for that reason, a culture of innovation is the root of the "innovation tree".

Cited by each interviewee as an innovation capability, an innovation culture was seen as the most prevalent capability at that, as presented in Chapter 5, Table 8. 14 out of the 15 interviewed organisations declared that there was a culture of innovation within their respective companies (Chapter 5, Table 23). The firm lacking, admitted to being in the process of nurturing such. It also certainly proves to be the most important capability as frequency shows, which defends the notion of a symbiosis between organisational culture and innovation capabilities, as depicted in Figure 1, Chapter 3.

Amabile et al. (1996) and Ekvall (1996) demonstrated in their work, that the perceived work environment (consisting of both structural and cultural elements) does make a difference to the level of innovation in organisations. Dougherty and Cohen (1995) as well as Tidd et al. (1997) agreed by saying that creative and innovative behaviours seem to be encouraged by work environment factors. Mathisen and Einarsen (2004) concurred in their later article, that it is clear that organisations can create environments in which innovation can be promoted or limited. They further referred to the organisational culture as the organisational climate when they wrote that there has been considerable empirical work on organisational climates, supportive of the innovation process, and that several measurement instruments have been developed. According to Adams, et al. (2006), factors of successful innovation in organisations seem to be influenced by a broad organisational attitude towards innovation itself and finally the enablement through organisational alignment towards the goal of idea creation. Amabile (2013) wrote in her later work that managers at all levels who wish to foster creativity and innovation within their organisations can do so, not only by paying attention to what sort of individuals they hire to the kind of personal characteristics and skills that early creativity research emphasized, but also by paying attention to the environments they create for these potentially creative individuals. One of Holtzman's (2014) five key components to innovation portfolio success, is the creation of an innovation mind-set. He argued that organisations that are successful, put innovation at the centre of their business, boosting a culture in which ideas are allowed to prosper and that such companies have a governance structure suitable for innovation. When studying Schein's model of organisational culture, he refers to norms and values within an organisation, which is understood to be integral parts of the culture. Norms are derived from values, although intangible, could be evident in organisational symbols, rituals, language, and physical workspace arrangements (Schein, 1992). Innovative behaviours can result from norms that support information exchange about new ways of doing things within an organisation (Amabile, 1988; Moorman & Miner, 1997). Adams, et al. (2006) wrote that one of the seven areas of innovation management measurement proposed, is organisation and culture.

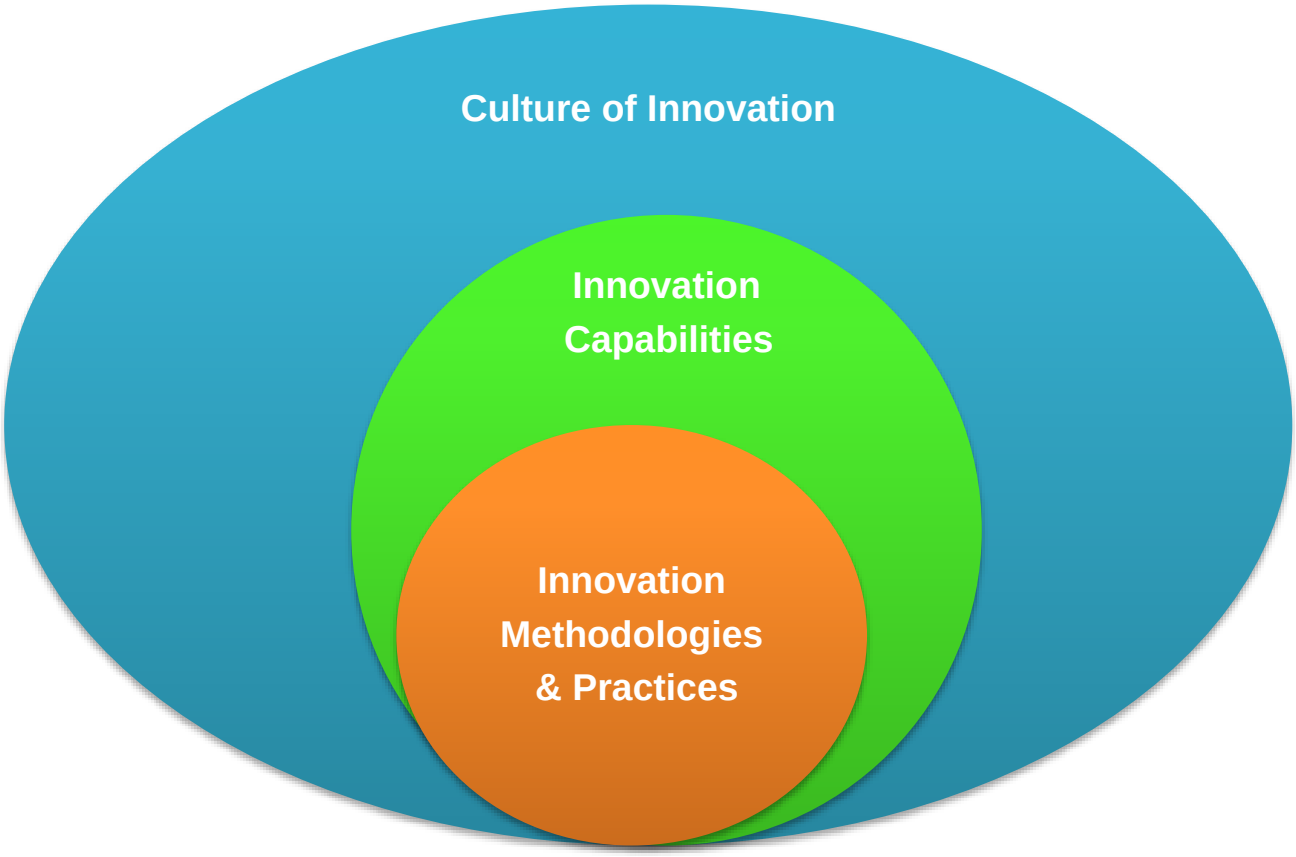
The interview with an insurance and financial services innovation specialist was complimentary to the literature: "…the most important thing has not been innovation, the most important thing has been the DNA of the organisation, being able to manage culture. If you can't manage culture you can try and innovate as much as you like, you are not going to get it right. Innovation comes from the right culture." A culture of innovation is also not a natural occurrence in innovative organisations, but is an imperative that needs to be fostered with intent, as Amabile (2013) iterates. The interviewee further concurred: "I think first of all innovation comes with intent, so are you innovating for the sake of innovating, or are you innovating in order to scale your business or to make your business more efficient or to grab

more market share in new territories? So, any innovation for the sake of innovation has no bearing on success, you then have the risk of becoming just a lab."

The results indicate the importance of Innovation Culture, but it is not necessarily recognised as an innovation capability by the literature of Hari, Subramaniam & Dileep (2014), Diaz & Faherty (2015), ., or Holtzman (2104).

Environmental influence is cited as having an effect on innovation in Chapter 2, and is categorised as an innovation practice by scholars. As part of the dual approach to discover the innovation capabilities present in the participating organisations, "environmental influence" was identified as a factor of innovation culture as depicted in Figure 6. The data interview process showed a clear influence of doing business in South Africa on innovation in these companies. Industry circumstances, geographic location, and local economic policy, are some of the environmental influences on innovation.

Figure 5: Symbiosis of Organisational Culture and Innovation Capabilities

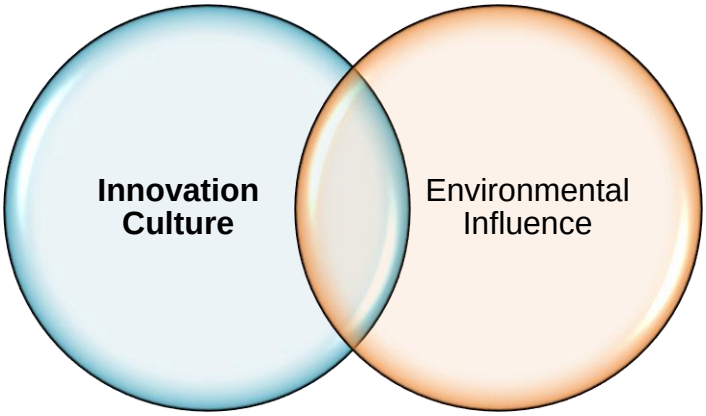


This correlates with the literature, where Mueller, Rosenbusch, & Bausch (2013) regarded

industry conditions, such as the institutional environment as influences on the scientific value of innovation. Katila & Chen (2008) cited innovative efforts of competitors within an industry sector and Audretsch & Feldman (1996); Jaffe, Trajtenberg, & Henderson (1993) mentioned the geographic proximity of inventors. This is in line with Hofstede's five dimensions of culture, although based on national influences, such as trust, corruption, civic rights, form of governance, and education, that Efrat (2014) revealed to influence innovation. Erfrat (2014) further stated that no matter the amount of money invested in the creation of innovation, national culture and its ability either to boost or to sabotage innovation must be taken into consideration. The same would be true for environmental influences on micro-economic levels.

An example of geographical difference was made by the interviewee from the publishing firm: "…we would see what the current trends they are offering in America are, and then we would duplicate their products and services here in SA. But we see there is a lag of around five to seven years in HR departments regarding training, management, leadership skill development and e-learning, as opposed to the American model. So we burned our fingers because we were always ahead of the curve. We brought out mentoring and coaching products two years before mentoring and coaching even hit SA, and it was a waste for us, so we totally broke ties with international big trends and really focused on what the pertinent needs in SA are and try to innovate new product offerings around that."

Figure 6: Innovation culture dependant upon environmental influences



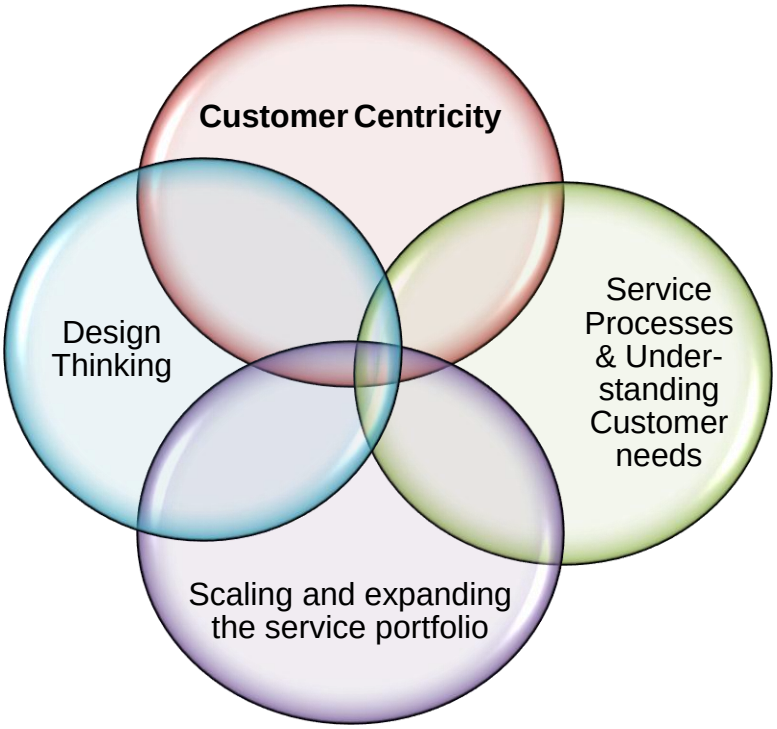
Although stated as being an innovation capability by all interviewees, Innovation Culture is not seen as a capability in the literature. It is agreed that it is an obligatory ingredient for the incubation of innovation and building of innovation capabilities. Therefore, Innovation Culture should be removed as a capability, but rather seen as the root of innovation, which results in a total of ten innovation capabilities found as present in the South African innovation sector, which is depicted in Figure 17, and called the "Wheel of Ten Innovation Capabilities", later in the conclusive findings of this section.

6.2.2 Customer Centricity

The data analysis results show Customer Centricity, to be one of the top four innovation capabilities required for successful innovation. Table 14 presents the frequency analysis results and Table 23 shows that 13 of the interviewed organisations view customer centricity as an essential innovation capability as part of their innovation strategies.

During the process of matching the interview data with the notion of innovation capabilities offered by .(), the operational capabilities of sas well as ucorrelated. Scaling and expanding the service portfolio is a dynamic capability that also categorises under Customer Centricity. The innovation practice that supports the identification of customer Centricity as innovation capability is design thinking. The fusion of these is presented as Figure 7.

Figure 7: Customer Centricity supported by Operational and Dynamic capabilities as well as innovation Practices.



According to Brown & Katz (2011), the context of innovation is changing and the opportunity exists to not only design for customers and profit, but to meet the needs of communities, and to make the world a better place. Some social enterprises and organisations may perhaps not be using design thinking consciously due to difficulty in moving past conventional problem solving, but intuitively some aspects of design thinking may already be part of their approach to innovation. They stated that a human-centred approach is key to balance the perspectives of the users, technology and the organisation.

The interviewees commented on their approaches to customer centricity. The interviewee from the publishing firm said: “We totally innovate around what the customer needs, we do not create a value proposition from ourselves and try to sell that on to the clients.”

The consultancy firm’s innovation expert gave her view of customer centricity as an innovation capability: “Innovation capability for me would be the ability to generate things of value to clients…”

And the innovation specialist at a well-known technology company repeated, that a focus on customer needs is an organisation’s impetus towards innovation: “You can’t compromise at the end of the day on the customer side, you have to balance the proposition…”.

6.2.3 Innovation Platform

The results of the frequency data analysis presented an Innovation Platform as the third highest ranking capability for innovation spoken of during the interview process (Table 22). This innovation capability was a surprise emergence, but this discussion demonstrates that literature has mention of similar capabilities. The practitioners almost concurred on the relevance of such a platform for bottom up innovation and the creation of a communication platform for this to happen. Added to that is the significance of a process where ideas are successfully filtered and implemented.

Kim and Wilemon (2002), Moenaert et al. (1995) and Verworn (2002) wrote that the early stages of innovation could be a cloudy period, while Holtzman (2014) stated that companies that efficiently innovate, manage the process and have governance structures in place, suitable for innovation.

The Head of Health Research and Development at one of the participating insurance and financial services companies said: “Innovation exists in all people. The key innovation capability, is to give people creative confidence … the confidence to come up with an idea, but also the confidence that once you have come up with that idea that there is actually a very robust business process that validates that idea and develops that idea and recognizes that idea. That’s very important. I don’t think you can be innovative simply by employing innovative people and encouraging them to be innovative, you have to think about innovation as a process, you have to take an engineering point of view of innovation before you can make innovation, and I think for us our innovation capability lies in that. It is to say how do you encourage innovation and then how do you build this process in which innovation, that idea is validated, developed and recognized. And that’s the part we are trying to populate over time, say what’s the right way to validate the idea, develop the idea, recognize the idea and launch the idea”.

The researcher found no innovation practice correlation with this innovation capability, but did find 's () notion of "formalisation" as operational capability of relevance, where "formalisation" means to have a capability to streamline and formalise work processes (Figure 8). They stated it as having major importance. In this case it is a formalisation of the innovation process within an organisation.

6.2.4 Organisational Agility

An ability for speed was mentioned in the interviews, with speedy communication, fast delivery, quick innovation processes and rapid communication platforms, grouped under this ability. The frequency analysis showed that although it formed a leitmotiv, the frequency was of the least amongst the capabilities that surfaced. All the aspects of such an ability form part of the Organisational Agility that received a much higher frequency as depicted in Table 17. Speed Ability was thus merged to become part of Organisational Agility, ranking it as the fourth most important innovation capability identified.

Amabile, Conti, Coon, Lazenby & Herron (2013) developed the KEYS creativity model. This model propagates that perceptions of five work environment dimensions may play an important role in influencing creative behaviour in organisations, one of which is organisational impediments, which relates to Organisational Agility.

The CEO of the mobile gateway organisation echoed this sentiment: "The bigger you become, the more processes you have, the more decentralized you become, the harder it is for you to know what the left hand is doing and also be in touch with your clients. It may change now with big data, as a customer has more information at his/her fingertips, but in general I think the large organizations really struggle with staying close to the market. Also, the larger the organization is, the more you have at stake and at risk, so start-ups have got nothing to lose so they can build something on block-chain and not worry too much about the full element that may exist, they have nothing to lose but a large bank can't go do that, too much at risk".

The other insurance and financial services organisation that forms part of this study, achieves speed agility to innovate, through the organisational structure: "We have kept the structure in the organisation very flat, we only have 2 levels, we have general staff, one level of management and then directors. We use that so that we can have a very quick feedback loop in terms of what the clients on the ground are finding in terms of an innovation space, … It allows us to react very quickly to customer needs and what we can do then is develop systems that allow us to be the leading brokerage in SA instead of trying to catch up."

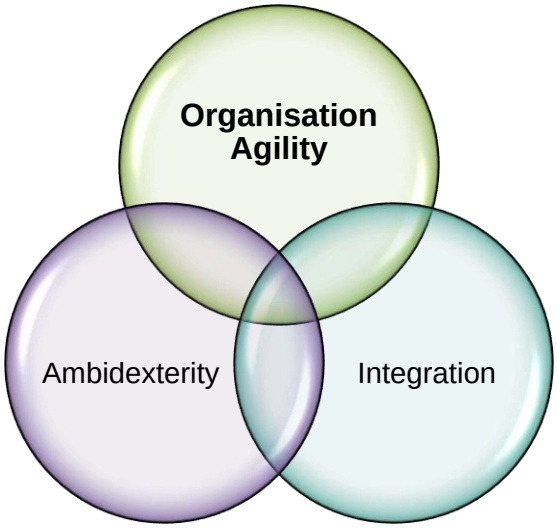
Two of Holtzman's (2014) five key components to innovation portfolio success, refer to Organisational Agility namely, **"…**a clash of cultures between those responsible for generating innovative ideas and the finance professionals who are guardians of financial integrity and rigor" and he warns that companies must beware of the dangers of trying to measure early stage innovation with the same firm metrics used in business operations. Rothwell (1992) refers to such an Organisational Agility as "corporate conditions" and Chiesa et al. (1996) as "enabling processes". Beckler and Whisler (1973) referred to the notion of a polychronic organisation, where a company has an ability to be in two states at once, meaning that a business needs to be able to allow for enough freedom for the exploration of creative possibilities, but sufficient control to manage innovation in an effective and efficient way (Adams, et al., 2006). According to Adams, et al., (2006), even the environment and organisation, and finding balance between freedom and control, are factors in idea generation.

One technology organisation's business model to enable innovation, was to separate their business into a value business and volume business. "The value business is where intellectual properties are designed, and the volume businesses, in which they mainly re-sell. Innovation happens in the value business and accountability is to the CEO, not to the COO, with separate budgeting, and a separate facility created, that looks at the business of the future. In other words, the dual operating system culminates in systems of today funding business of the future."

Another organisation involved in the banking sector, is currently in a drive to integrate business units to facilitate and enable quicker innovation, trying to bypass the encumbering factors that the mobile gateway CEO spoke of. This corroborates 's view of "integration" as an operational or innovation capability. Similarly, "ambidexterity" as innovation practice in an agile environment where both exploitative and explorative innovation practices are used, point to the validation of Organisational Agility as an innovation capability.

At one of the insurance and financial services organisations, they see it as a platform where the innovation team present enough information on a concept or a prototype or a product to executive level, so that that they can give their input and direction into where they think this is going. These executives can then align their business units to support that innovation process from an operational point of view so they know from an assistance development point of view what is coming

Figure 8: Venn diagram of Organisational Agility

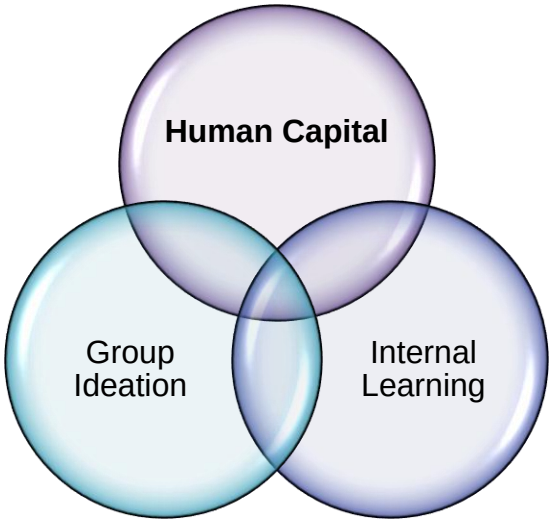


6.2.5 Human Capital

A plethora of literature exists studying the influences, shortcomings and benefits of human capital in innovation processes of organisations. Patterson (2003) provided the Innovation Potential Indicator, as a model for the investigation of individual behaviours that might foster or smother innovation in the workplace. Eisenmann, Ries, & Dillard (2011) wrote about collaboration and dispelled the myth of the lone genius inventor, stating that most great creative work is done in small teams. The Team Climate Inventory (TCI) (Anderson and West, 1996, 1998) includes the participative safety factor (the degree of participation of the team in decision-making procedures, and how secure team members feel psychologically, about sharing ideas on new and improved ways of doing things), and the KEYS creativity model (Amabile, Conti, Coon, Lazenby & Herron, 2013) propagates that perceptions of five work environment dimensions may play an important role in influencing creative behaviour in organisations. .s, One of their proposals for innovation capability is “Internal learning” which relates to that of the human capital and so does the innovation practice of “Group Ideation”.

Presented in Chapter 5, Table 12, is the frequency analysis of the Human Capital that was a result of the interview analysis. Human Capital is ranked fifth of the innovation capabilities identified, as seen in Table 22.

Figure 9: Venn diagram of Human Capital



The insurance and financial services interviewee remarked: “I think for us the breakthrough has been that you can only drive innovation if you actually have people whose job it is to do innovation you pay, so I guess the big thing for us was to say you have to make it people’s job to be innovative…”

Rewards also play a part in the performance of the employees in an organisation, as the CEO of the airline explained: “Everyone shares in the profits to some extent so the executives definitely on a higher degree, obviously more risk based remuneration on an executive level, so the company does well, the executive chair, at the general staff level we do have an annual bonus that is dependent on the company profits and that’s the basis on which a lot of people forward their ideas.” The Human Capital capability is also closely linked to the organisation’s culture: “…the culture of the people in the airline compared to its competitors, the fact that we do rely heavily on the frontline staff to do the right thing, to take the right decisions and to fix problems so it’s a degree of delegating responsibility and authority and doing that properly so you don’t just get use of the system and that makes all the difference. We do rely on the thousand eight hundred customer facing employees. There is no way that the management can deal with that, other than through the customer facing employees, so you have to operate on the basis of the value chain, that if you look after your employees correctly they look after the customer correctly. You can’t expect employees to deliver any different attitude to the customer than what you deliver to your employees so that is fundamental in our culture.”

6.2.6 Technology Ability

A technological ability as an imperative to innovate was asserted by al organisations during the interview process. Ranking sixth as innovation capability, according to the frequency analysis and presented in Table 22, the ability to innovate through technological means or with technological support, is declared as a factor that influences the dimension of innovation capacity by Hari, Subramaniam & Dileep (2014). They refer to it as a technology orientation. 14 of the 15 organisations that took part in this study uses a technology ability as support for innovation.

Internal IT departments, the use of Big Data, Cloud, or digital platforms can lead to the development of new products and services, as Diaz & Faherty (2015) iterates in speaking of the practicability of using three or more innovation capability dimensions in an organisation. One of which, they listed as a technology development capability. Lawson and Samson (2001) describe an innovation capability is the "ability to continuously transform knowledge and ideas into new products, processes and systems for the benefit of the firm and its stakeholders" (Breznik & Hisrich, 2014). A Technology Ability certainly facilitates in combining knowledge that reflects in innovation results such as products, services, processes and systems (Breznik & Hisrich, 2014). According to Hung et al. (2015), organizations are more likely to introduce and develop innovations that can utilise their technological capabilities, which are substantial in scale and significance, recognisable at least in the managerial sense and intentionally deployed in various directions of activity (Sydow, Schreyögg & Koch, 2009). And Carneiro (2000) added that innovation capability depends on the evolution of knowledge. .() also listed technologies as one of their innovation capabilities.

The gaming industry is technology dependant and the organisation that took part in this study's business is 80% technology based.

The CEO of the aviation firm remarked: "Massive new IT platform implementation was an innovation initiative because it was not about the IT platform."

The banking sector innovation specialist's view concurred: "…the fact that we insourced our own IT function, I think that is our core competency and that gives us our innovation leverage."

From an innovation practice perspective, no matches were found, but enough literature supports the practitioners' views to safely name Technology Ability as an innovation capability.

6.2.7 Financial Resources

Having the financial resources to invest into innovation processes and initiatives, is believed to be crucial by the interviewees as found during the data analysis process. Some organisations innovate inorganically, through the acquisition of innovation through other companies and others spend on organic innovation like research and development projects. Even building innovation platforms and technological ability are exercises that ask funding. Financial Resources was thus seen as a capability to innovate or at the very least support innovation. This capability ranked seventh after the frequency analysis was done, presented in Table 22, and 11 out of the 15 organisations interviewed claimed to have the capability, presented in Table 23.

The literature confirms that investment is vital to incubate innovation, especially in large firms. Entrepreneurs often have to do without. Brown & Katz (2011) wrote that one should recognize that different types of innovation require different management strategies and investment, as they also carry different levels of risk. Adams, Bessant, & Phelps (2006) stated that many big companies have the resources to spend large amounts of money on R&D, but smaller companies do not necessarily have the means for formal R&D and generate innovation in unconventional ways, which does not mean with less success. Radical new products require a different approach, in terms of financing and management, to make them successful (Colarelli, O'Connor and DeMartino, 2006).

.() saw “commercialisation” as an operational capability that could be synonymous to an innovation capability, although financial resources are needed to commercialise and commercialisation in turn, can afford financial resources. A clear difference can be seen between the financial returns that an organisation can derive from its commercialised innovations and the scientific value of these innovations, which is of relation to the effect that they may have on later innovations (Mueller, Rosenbusch, & Bausch, 2013).

The Head of Health Research and Development confirmed this: “I can fortunately say that we recognised very early that you have to put real money behind an operation, you have to have a budget for the people and the process…”

At the consultancy firm, where a portion of the budget was allocated to innovation and ring-fenced for that purpose, the interviewee said: “An important point here is how you actually finance the innovation group because if it’s purely business of today, that innovation team will not get through the first five years, it will die and therefore you need a corporate budget which corporate strategies supports.”

The publishing respondent lamented innovation in a budget constrained environment.

The finding of the presence of Financial Resources as an Innovation Capability concurs with the existing literature on innovation, but is not cited as an innovation capability. There is no innovation practice correlation to Financial Resources as an innovation capability. The closest reference to such a capability is Diaz & Faherty's, (2015) notion of "transaction capability", therefore the result compliments the capability literature.

6.2.8 Future Focus

The ability to plan ahead, calculate possible disruptions and innovate accordingly is a capability that surfaced at 11 organisations (Table 23). Frequency analysis ranked this capability as 8th (Table 22). Current innovations are constrained to certain lifecycles and may date in its value offering to customers.

The innovation literature does not cite a Future Focus as in innovation capability, although a lot has been written about disruption and the vigilance needed to sustain innovation. Van Everdingen & Waarts (2003) commented on Hofstede's fifth cultural dimension, the Long-term Orientation Index (LTO), that organisations with a long-term orientation will have a future focus on results and be more receptive to change, which means that they would be expected to be more innovative. The stable of innovation practices, however, is of value as Anticipatory Competence Building (ACB) gives insight into the need for Future Focus as an innovation capability. Hari et al. (2014) have consolidated six dimensions of ACB through their research, of which "Future competence" and "Competence renewal" in anticipation of customer demands are in relation to a Future Focus as an innovation capability.

The networking solutions firm's CEO: "Your differentiation today, may last you for a year, then it's old news, it's time to re-invent that, time to re-think that, so over the 13 years or so that we have been going, we have re-invented our product set 10 times."

One of the technology firms' interviewee's view was: "You have to save money closest, to spend on your future and don't see innovation as an expense or R&D, see it as an investment in your future."

Future Focus as an innovation capability compliments a gap in the innovation capability literature.

6.2.9 Leadership

Another important ingredient for innovation that came to the fore was a Leadership influence. The results of this frequency analysis is depicted in Table 6. 14 Companies claimed to have exceptional leadership that supported innovation (Table 23).

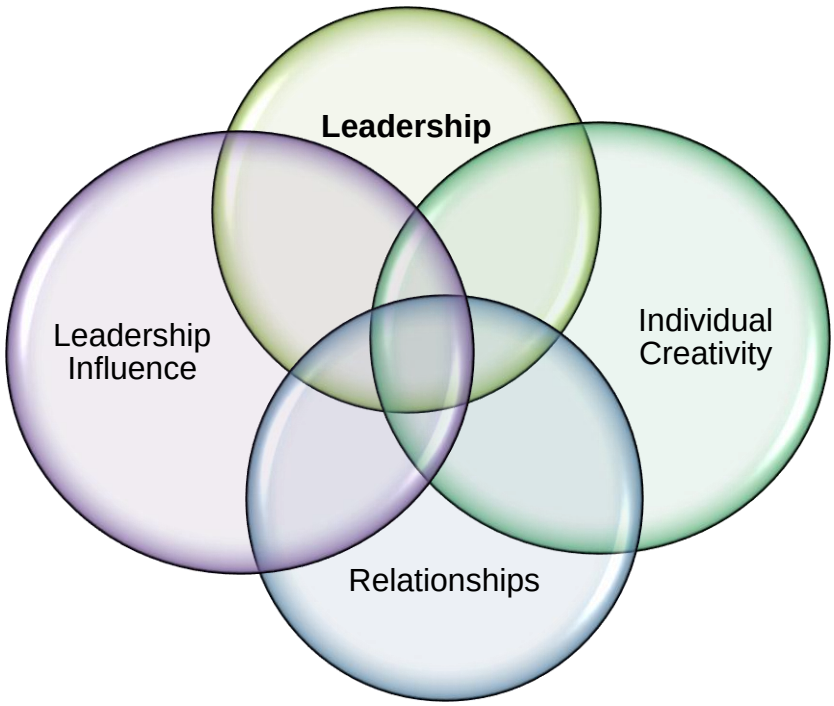
The literature too, is rife with articles, opinions and research on the subject of leadership and its influence on innovation. Amabile, Conti, Coon, Lazenby & Herron (2013) propagate "supervisory encouragement" as playing an important role in influencing creative behaviour in organisations. Holtzman (2014) wrote that leaders should develop an innovation culture based on trust among employees and that organisations should formally integrate innovation into the strategic-management agenda of senior leaders. But he also found that while innovation is cited as as an important driver of growth by senior executives, few of them explicitly lead and manage it. The way in which leaders behave, sends strong signals to employees. This is apparent in most top-down initiatives. Leaders are required to encourage employees so as to gain trust and win over their hearts and minds. Strong leaders and top executives actively manage and drive innovation, as well as encourage and protect it. Obstacles to successful innovation are due to executives' failure to encourage and be open to new ideas and risk taking (Holtzman, 2014). Should this not be done, organisational members, which includes lower and mid level managers, will unfortunately continue "business as usual" without the consideration of making improvements or refinements to existing products and services, unless their leader exhibits transformational behaviours and triggers them to do so (Jansen et al., 2009). Their study further suggested, that organisations and their leaders need to be cognisant of how transformational and transactional behaviours by their leaders could potentially shape the strategic direction of the company. Their findings further proposed that this is not necessarily a static situation (Jansen et al., 2009). They purported that past research revealed a high correlation between transformational leadership behaviours and contingent reward behaviours reflecting a likelihood that they exist in different amounts and intensities in the same individuals (Bass, 1998). To master both behaviours, executives must develop "behavioural complexity" or the ability to play competing leadership roles simultaneously (Denison et al., 1995), which is consistent with Quinn's (1988) competing values model. Ernst (2002) mentioned the impact of a dedicated project leader. Brown & Katz, (2011) asserted that everyone in the organisation should understand the goals as leaders guide the creation process. Leadership influence and behaviours on innovation in an organisation, let alone innovation at scale, could be instrumental in having impact.

The results of the interview process agreed with the existing literature. The Innovation Manager of the consultancy firm's view was: "Leadership influence is both positive and negative. So it was interesting because we saw both paradigms, if you have an incredibly strong leader that's able to hold the vision, keeps holding that team's vision and inspiring

and creating that enthusiasm. From a leadership perspective it's incredibly important to have the right visionaries in place."

The literature on capabilities and innovation practices both agreed. .() cited relationships as part of capabilities and innovation practices add individual creativity, supported by leadership and a positive leadership influence to develop innovation as ingredients of successful innovation. Leadership as an innovation capability dimension in an organisation is referred to by Diaz & Faherty (2015) as a management capability. This finding thus agrees with the literature. Figure 10 depicts this confluence as support to Leadership as capability.

Figure 10: Venn diagram of Leadership



6.2.10 Knowledge Sharing

The ability to share knowledge, is something that only seven of the participating organisations engage in due to their respective complexities in industry, as described in Chapter 5. Surprisingly Knowledge Sharing ranked low on the frequency analysis scale (Table 22), although mentioned as an innovation capability by almost half of the companies interviewed.

The sourcing of external knowledge to contribute to innovation, is a process of an organisation's inbound open innovation activities, where external knowledge flows into the

organisation (Chesbrough, Vanhaverbeke, and West, 2006; Dahlander and Gann, 2010; Brunswicker & Vanhaverbeke, 2013). The Knowledge sharing capability includes the innovation practices of explorative and exploitative innovation, the use of mature or recent knowledge, ambidexterity and open innovation (inbound or outbound). The literature of (Eisenhardt, 1989; Sørensen & Stuart, 2000; Katila, 2002; Nerkar, 2003; Benner & Tushman, 2003; Holmqvist, 2004; Lee, Lee, & Lee, 2003; Jansen, Vera, & Crossan, 2009; Brunswicker & Vanhaverbeke, 2013; Burcharth et al., (2014) and Capaldo et al., 2014) in Chapter 2, state the uses of all these innovation practices as conducive to knowledge sharing activity as innovation capability.

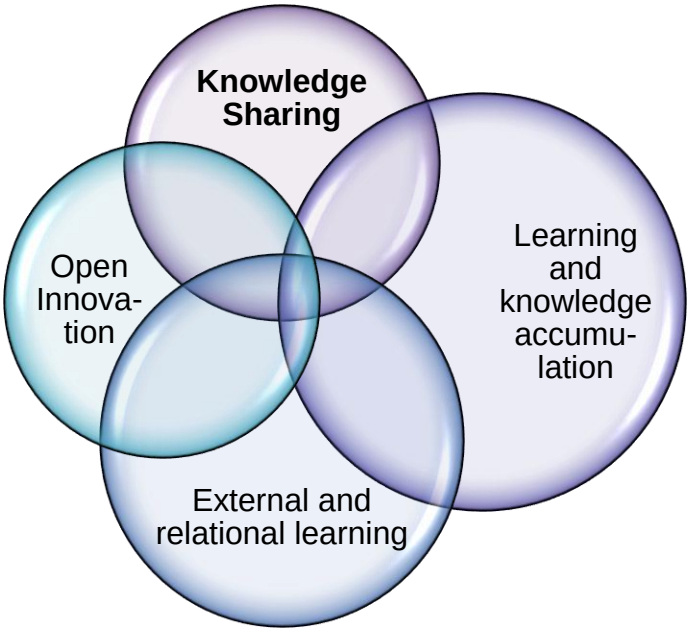
The literature about innovation capabilities iterate elements of Knowledge sharing as an innovation capability as “learning and knowledge accumulation” and “external and relational learning” (.,). The Venn diagram in Figure 11 shows how the innovation practice of open innovation and the two capabilities mentioned in the literature support Knowledge Sharing as innovation capability.

The CEO of the airline company was frank about their use of inbound open innovation: “We look at what the rest of the world is doing globally and if anyone anywhere in the world is doing something new that we can adopt.” The interviewee continued: “Looking a lot outside the business to what has been done by other airlines around the world, one doesn’t always have to reinvent the wheel on a global level to get the best, and we don’t like being guinea pigs on anything”.

The gaming and accommodation organisation’s CEO said: “Globally people have learnt lessons and globally they are very willing to share, such a small world, it’s not just a cliché.”

Knowledge Sharing as a result of the search and identification of Innovation Capabilities in South African organisations is agreeable to existing literature and not necessarily a new finding.

Figure 11: Venn diagram of Knowledge Sharing



6.2.11 Communication

The lowest identified capability in ranking after the frequency analysis as presented in Table 22, is an ability to communicate effectively and efficiently, internally (employees, supply chain) or externally (customers). The participating organisations believed it to be a capability that could foster successful innovation and 14 companies agreed to owning the capability.

According to Amabile (1988) and Moorman & Miner (1997), innovative behaviours can result from norms that support information exchange about new ways of doing things within an organisation. Kivimäki et al. (1997) proposed a fifth factor to Patterson's Team Climate Inventory (TCI), namely, 'interaction frequency' which relates to the frequency of contact and communication within the project team (Adams, Bessant, & Phelps, 2006). Ernst (2002) specified a range of generic characteristics for the dedicated project group assigned the innovation task. Inter-functional communication and cooperation was one of these characteristics.

One banking institution called this a "communications platform" and an insurance and financial services organisation described how they go about communicating internally, pertaining to innovation initiatives: "It doesn't help if you employ someone to be innovative but it's not an agenda on the executive committee on a weekly basis. If innovation, new ideas and new products don't form part of a weekly agenda, you can forget about doing something innovative. If it's something you do on a monthly basis, or on a quarterly basis, where you think let's have a look at what the landscape is like, it's not going to work, so we have scheduled time on a weekly basis with the CEO's of each of the businesses where we will sit down with them and take them through everything that we are doing."

Communication does not form part of any innovation practices or literature referring to innovation capabilities. This finding would then be seen as complimentary to the field of innovation capabilities in particular.

6.2.12 Conclusive findings for research question one

The researcher found that, although Innovation Culture was named by the innovation practitioners as an innovation capability in their respective organisations, it in fact is an incubator for the building of innovation capabilities where without innovation can not flourish. Innovation Culture is thus not classified as an innovation capability. The interview data identified ten innovation capabilities present in practice in the sample group namely, (1) Customer Centricity, (2) an Innovation Platform, (3) Organisational Agility, (4) Human Capital, (5) Technology Ability, (6) Financial Resources, (7) Future Focus (or vision), (8) Leadership, (9) Knowledge Sharing and (10) Communication. The results indicated that this was also the order of importance as presented in Table 22.

The interview data further indicated the prevalence of each innovation capability identified at each of the organisations studied. Customer Centricity was present at 13 companies, Technology Ability, Communication and Leadership was present at 14 companies, Organisational Agility, Human Capital, Financial Resources and a Future Focus was present at 11 of the companies, whilst an Innovation Platform and Knowledge Sharing was only present at eight and seven of the companies, respectively (Table 23).

An enhancement of the original capabilities found and discussed in Chapter 5 was made to reveal the wheel of Ten Innovation Capabilities below, present in South African organisations that innovate successfully.

Figure 12: The Wheel of Ten Innovation Capabilities in the ideal portfolio, found to be incubated by a Culture of Innovation in South African Innovation Organisations

6.3 Discussion of Results for Research Question 2

Do they make use of a portfolio of innovation capabilities?

isthe presence of a “portfolio of innovation capabilities” in South African organisations in doing so. With the ten innovation capabilities present in South African organisations identified, the next task was to identify a confluence of these capabilities in the sample group of organisations.

Holtzman (2014) wrote that twas. research literature on the subject of a portfolio of innovation capabilities, it is understood that this topic is fairly new. There is no existing model to compare to and .()s, Breznik & Hisrich (2014) and.() fused operational and dynamic capabilities and identified (1) D, (2)S,(3) U,(4) I, (5) Fs, (6) E,(7) I, (8) Cs, (9) L and (10) S, as innovation capabilities.Academia have argued innovation capability to be a synthesis of capabilities (Parashar and Singh, 2005; Tidd and Bessant, 2009; Breznik & Hisrich, 2014). Hari, Subramaniam & Dileep (2014) revealed seven factors that influence the dimensions of Innovation Capacity, where the word “capacity” is interchangeable with “capability”, through three case studies: (1.) Concurrent engineering, (2.) Customer research, (3.) Improvisation, (4.) Experimentation, (5.) Creative Potential, (6.) Technology orientation and (7.) Competence management. Diaz & Faherty (2015) speak of the practicability of using three or more innovation capability dimensions in an organisation. They list four capabilities in their article: (1) technology development capability leading to new products and services, (2) process operations capability, (3) management capability and (4) transaction capability. Their research purports that the implementation of a single capability may lead to success, but that it would need to be supported by at least two other innovation capabilities, which ushers the researcher to Holtzman’s (2014) implication for the need of a portfolio of innovation capabilities for successful innovation to take place. Holtzman (2014) further wrote that “innovation that is driven by a portfolio of capabilities creates exponential value. Organisations that have developed a culture of continuous innovation are able to develop a portfolio of innovation capabilities and as a result continuously and sometimes radically improve their products, processes, and the competitive landscape of their organisation as a whole”.

he researcher set out to identify the range or portfolio of innovation capabilities used by South African innovation organisations in conjunction, that lead to successful innovation. After a cross-tabulation analysis (Appendix V), four main innovation capabilities that were present in 13 organisations were identified: Customer Centricity, Technological ability Leadership and Communication as presented in Table 25 and depicted in Figure 18 as level one capabilities. That would translate to a minimum portfolio of four innovation capabilities, although the least amount of innovation capabilities found in a participating organisation, was a portfolio of five innovation capabilities at the publishing firm and at the consultancy firm, as presented in Table 26. It is with these capabilities that one should note that Winter (2003) stated, that “a dynamic capability is a high-order capability that operates to extend, modify or create ordinary capabilities”, which is in line with Helfat et al’s. (2007) definition that “dynamic capabilities create, modify and extend other capabilities, including themselves” (Breznik & Hisrich, 2014). They further constructed that “the notion of dynamic capability could be replaced with the notion of innovation capability”.

The most innovation capabilities found in a portfolio, was ten (Table 24), which means that all capabilities identified, populate the specific portfolio of innovation capabilities. Figure 18 depicts three levels of innovation capabilities found according to the likelihood of being part of a portfolio, based on the results of this study.

To quote Holtzman (2104): “So the firm has to discover what is going to keep the advantage fresh. As a result, developing a portfolio of innovations comprised of a healthy mix of disruptive and incremental innovations will create the internal DNA of innovation that is extremely difficult to imitate. This new “innovation DNA” can serve as a sustainable advantage.”

The research question is thus answered in the positive and Holtzman’s (2014) statement is proved as correct. The results compliment the literature with the identification and number of innovation capabilities found in such a portfolio. The mean amount of innovation capabilities in a portfolio accounts to 7.6.

Table 25: Number of organisational use of capabilities after the removal of Innovation Culture as innovation capability

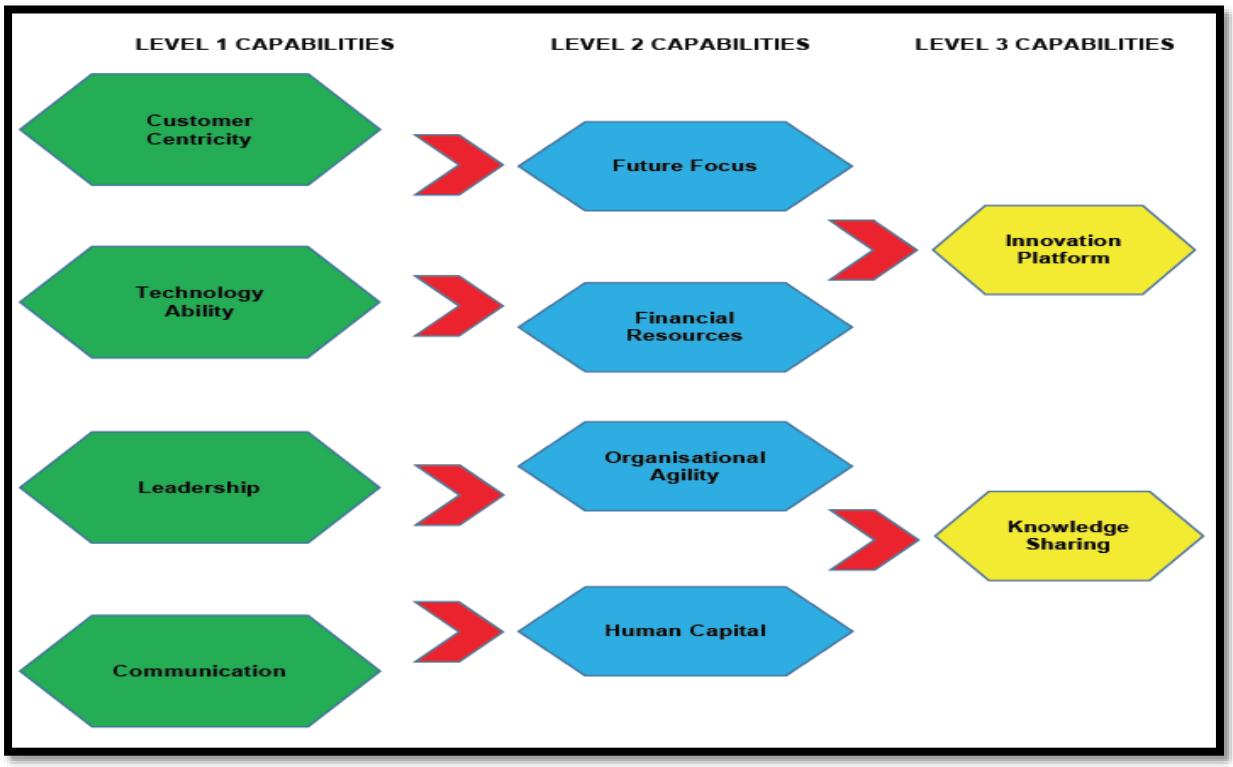
	Innovation Capability	Organisational presence
1.	Customer Centricity	13
2.	Innovation Platform	8
3.	Organisational Agility	11
4.	Human Capital Capability	11

5.	Technological Ability	14
6.	Financial Resources	11
7.	Future Focus	11
8.	Leadership Capability	14
9.	Knowledge Sharing	7
10.	Communication	14

Table 26: Innovation Capabilities per Company Portfolio after the removal of Innovation Culture as innovation capability

	Organisation	Capabilities in portfolio
1.	Gaming & Accommodation	9
2.	Internet Payment	7
3.	Mobile Gateway	7
4.	Aviation	6
5.	Networking Solutions 1	10
6.	Banking Institution 1	10
7.	Banking Institution 2	6
8.	Networking Solutions 2	7
9.	Consultancy	5
10.	Insurance & Financial Services 2	7
11.	Publishing	5
12.	Technology 2	9
13.	Insurance & Financial Services 1	10
14.	Energy	7
15.	Technology 1	10

Figure 13: Innovation Capability Portfolio Prevalence



6.3.1 Conclusive findings for research question two

The results indicated that the notion of a portfolio of innovation capabilities does exist in South African organisations, with the minimum amount of capabilities in such a portfolio being five capabilities. The interview data indicated that four of the companies interviewed, have a portfolio of innovation capabilities that consists of all ten identified capabilities. The researcher found that no organisation that took part in this study had a lack of a portfolio of innovation capabilities.

The research indicated that some of the capabilities that form part of the portfolio support or incubate other capabilities and where a certain capability lacked, it would have an effect on the mix of innovation capabilities found in the portfolio.

6.4 Conclusion

The model of “The wheel of Ten Innovation Capabilities” reflects an integrated framework of innovation capabilities found in South African organisations that innovate. It was also ascertained, whether there is a presence of a “portfolio of innovation capabilities” in the South African innovation industry and these were successfully identified.

The research objectives, as posed by the two research questions in Chapter 3, have therefore been met and contribute to the current literature of innovation capabilities and a portfolio of innovation capabilities.

CHAPTER 7: CONCLUSION AND RECOMMENDATIONS

7.1 Introduction

In this chapter the innovation capabilities identified are discussed in terms of the findings and Holtzman's (2104) notion of a portfolio of innovation capabilities, as well 's() synthesis of capabilities, to form a range of innovation capabilitiesas discussed in Chapter 4 and further developments, illustrated in Chapter 5 and Chapter 6. Recommendations for executives and innovation team leaders are presented based on the findings. Finally, future research recommendations are discussed.

7.2 Synthesis of Research Data

This study endeavours to translate the findings in a tangible form, to be of purpose to practitioners and academics, with an end result of creating a model of innovation capabilities within a portfolio of innovation that lead to successful innovation within organisations, relevant to South African companies in particular and possibly others to refer to.

This research study, combined the supporting literature and the findings to arrive at a model of innovation capabilities found in South African organisations, who are known for innovation. The initial research showed that a clarity of innovation capability labelling was not attainable as some academic research used a synthesis of operational and dynamic capabilities to term innovation capabilities and others were found to be rather abstract in the identification of specific capabilities. Innovation capabilities referred to by previous research studies:

.()

- D.
- S
- U
- I
- Fs
- E
- I
- Cs
- L
- S

Hari, Subramaniam & Dileep (2014)

- Concurrent engineering
- Customer research
- Improvisation
- Experimentation
- Creative Potential
- Technology orientation
- Competence management

Diaz & Faherty (2015)

- Technology development capability leading to new products and services
- Process operations capability
- Management capability
- Transaction capability.

The above relates to the two research questions posed in Chapter 3. The research findings presented in Chapter 6, while supported by the existing literature, also contributed to the broader theory concerning the identification of innovation capabilities present, and the existence of a portfolio of innovation capabilities in South African organisations.

The first contribution relates to Innovation Culture as incubator or innovation capability:

- Innovation Culture was ruled out as an innovation capability and found to be the initial building block for any innovation capability creation to be possible.

In addition, this study provided empirical support for the literature regarding the importance of a culture of innovation, by Amabile (1988), Schein (1992), Dougherty and Cohen (1995), Amabile et al. (1996), Ekvall (1996), Moorman & Miner (1997), Tidd et al. (1997), Mathisen and Einarsen (2004), Amabile (2013), Amabile, Conti, Coon, Lazenby & Herron (2013) and Holtzman (2014). This further contributes to the notion of Innovation Culture not being classified as an innovation capability and substantiating the KEYS scale and Team Climate Index.

The second contribution relates to the identification and labelling of innovation capabilities in a South African context:

- Ten major innovation capabilities were exhibited in the study and identified:
    - Customer Centricity
    - Innovation Platform
    - Organisational Agility
    - Technological Ability

- Leadership
- Human Capital
- Financial Resources
- Future Focus
- Knowledge Sharing
- Communication

- Each innovation capability identified, explained:
  - ❖ Customer Centricity is the capability to focus on the customer through offering value products or services, providing solutions, and answering needs.
  - ❖ Innovation Platform is a formalisation of the innovation process for employees to take part in innovation, with the necessary screening and filtering of ideas through to implementation.
  - ❖ Organisational Agility is to have the ability to to differentiate, innovate without size hindrances, bureaucracy or red-tape, that could slow or deplete the process. Further, to have the organisational structures in place that would support and encourage successful innovation.
  - ❖ Technological Ability, where organisations are able to insource their technological needs, embrace technology in innovation and use technology in knowledge development and scaling of the business and products.
  - ❖ Leadership capability, where the organisation's management support and encourage innovation, follow lower power distance styles to encourage organisational innovation, communicate effectively and have vision.
  - ❖ Human Capital, as an imperative part of the innovation process through talent, performance, attitude towards innovation and idea generation.
  - ❖ Financial Resources is to have the capability to invest in the innovation process and other innovation capabilities, with budgetary requirements and rewards in place, as well as acquisition of innovation and commercialisation of products and services.
  - ❖ Future Focus, where organisations realise the lifespan of innovation and plan ahead for possible disruptive innovations from competitors and focus on customers' future needs.
  - ❖ Knowledge Sharing, where organisations share knowledge with partners or competitors, making use of inbound or outbound knowledge sharing, and have innovation programmes in place to attract talent from tertiary institutions.
  - ❖ Communication is the effectiveness within the organisation, to communicate efficiently internally or externally with supply chain or customers.

This study, additionally affirmed empirical support for the literature relating to innovation capabilities demonstrated as presented by .(), Hari, Subramaniam & Dileep (2014) and Diaz & Faherty (2015). The study further contributes to and compliments existing literature on the subject of innovation capabilities.

The third contribution of this study relates to the weighting of capability prevalence. The findings contributed the following:

- Customer Centricity, Technology Ability, Leadership and Communication, are the most prevalent innovation capabilities.
- Future Focus, Financial Resources, Organisational Agility and Human Capital follow.
- Innovation Platform and Knowledge Sharing are the least probable innovation capabilities found.

In addition, this study provided empirical support for the literature regarding Diaz & Faherty (2015), Holtzman (2014), Hung et al. (2015) and Hari, Subramaniam & Dileep (2014), pertaining to innovation capability influences in organisations and likeliness of development of certain capabilities over others.

The fourth contribution of this study relates to the portfolio of innovation capabilities. The findings contributed the following:

- All participating organisations possessed a portfolio of innovation capabilities
- The size of the portfolio could indicate the level of innovation
- The portfolio mix could indicate the type of innovation
- A single capability of innovation is unlikely
- Innovation capabilities can generate or facilitate other innovation capabilities

In addition, this study provided empirical support for the literature by Winter (2003), Helfat et al's. (2007), Holtzman (2014) Breznik & Hisrich (2014), and Diaz & Faherty (2015) regarding the existence and need for a portfolio of innovation capabilities, the minimum amount of capabilities in such a portfolio and that innovation capabilities can create, extend and modify other capabilities.

7.3 Recommendations for Executives and Innovation Team Leaders

The recommendations for executives and innovation team leaders, were developed from common themes discovered throughout the interview process as well as the data analysis thereof, synthesised with the literature and findings.

It is important for executives and innovation team leaders to maintain a state of awareness regarding the support and encouragement of innovation activities within the organisation and its employees. Executives should understand that the culture created within the organisation is the starting point, for any successful innovation activities to take place. It was noticeable that organisations, successful in innovation, had separated innovation from the operational unit of the organisation, with separate measurement standards. The creation of an innovation platform with effective filtering and efficient communication between the executive, innovation team leader and innovation team or employees, can be beneficial to the innovation process. The executive and innovation team leader should understand the innovation process and its dependence on the building of innovation capabilities. Further, the mix of innovation capabilities in a portfolio should be consciously developed according to industry and business needs, to attain optimum innovation capability for the organisation. It would also be of use to executives and innovation team leaders to realise that innovation capabilities may change as customer needs and growth changes. It would therefore in some cases be necessary to identify capabilities that have become obsolete. Leveraging off such capabilities will become unfavourable and should be allowed to evolve or be removed from a portfolio. Finally, executives and innovation team leaders should take note of the risks involving innovation and that it may need financial support, and that an anticipation of future customer needs and possible disruptive threats should be part of the focus of innovation activities.

7.4 Recommendations for Future Research

There is a torrent of literature on innovation, but the amount of research on innovation capabilities and a portfolio of capabilities can be complimented by more studies about the subject.

Seven areas for future research are suggested below:

1. It will be valuable to understand how organisations shape their innovation capabilities and if the process is cognitive.
2. It will be valuable to investigate if variations in strengths of capabilities exist.
3. A more in-depth investigation could be conducted regarding innovation capability mix differences due to industry maturity or market velocity.
4. It would be of value to research the configuration of innovation capabilities in the portfolio as grounds of business success or failure.

5. Further research on the phenomenon of integration and institutionalisation of innovation capabilities in organisations.
6. It would be of use to do a comparative study on process and cost effectiveness between organic and inorganic innovation.
7. It could be interesting to research the developmental stages of innovation capabilities and their relation to one another in a portfolio.

7.5 Conclusion

This study added depth to the concept of innovation capabilities and the notion of a portfolio of innovation capabilities. This study added to literature through the empirical research and provided valuable insights into the labelling of innovation capabilities and the existence of a portfolio of innovation capabilities, specific to South African organisations. Furthermore, this study has contributed to the body of research relating to innovation, by extending the existing components, constructs and illustrating the interconnectedness thereof. The research findings have contributed to providing a more detailed impression of innovation capabilities and the capability elements of the portfolio of innovation capabilities that could lead to successful innovation, with a focus on doing business in South Africa.

The results from this research were presented in the model of the wheel of ten innovation capabilities, which offers a conceptual framework representation of the innovation capabilities identified that could be utilised by organisations in the process of changing or building capabilities for innovation, as well as populating a portfolio of innovation capabilities. Further, a process diagram of innovation capability according to prevalence is offered that could be utilised toward the building of a portfolio of innovation capabilities.

Pending a clear definition of “innovation capabilities” in existing literature, the researcher understands “organisational innovation” to be the successful implementation of creative ideas within an organisation. Within this definition, the ideas in question can be anything from ideas for new products, processes, or services within the organisation’s line of business, to ideas for new procedures or policies within the organisation itself (Amabile,1988). It is thus deduced that innovation capabilities are directly related to the organisational culture of innovation and the practice of innovation methods, as explained in Chapter 2. Without either one, innovation capabilities would not exist.

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APPENDICES

APPENDIX I: Cover Letter

Mr Participant 30 September 2015

Johannesburg

RE: GIBS MBA Research Project -

Dear Sir/Madam,

I have taken time off to do an MBA at GIBS and am currently doing my MBA thesis. I would like to interview the relevant person at (company name), about innovation if possible. (Company name) is one of the top 10 South African companies on the Innovation index, and therefore it would be extremely helpful if I could interview the person responsible for Company name's) innovation strategy. It would not take more than forty-five minutes. Kindly point me in the right direction?

To give some clarity; we are working with a number of industry sectors to research the specific mix and ultimately the existence of a portfolio of innovation capabilities that lead to successful innovation in the South African context. Company names and interviewee's names will not be used, if chosen to be kept confidential. The different industry sectors are important though.

Here is a list of the question guidelines.

Q1. How would you describe your organisation's culture towards innovation?
Q2. Kindly explain the company's innovation strategy?
Q3. How frequent does the organisation have to come up with new products or services?
Q4. What are the organisation's dynamic and operational capabilities?
Q5. Which innovation methods do you apply?
Q6. What would you say, the mix of the organisation's innovation methods, activities and practices are, that make for your success in innovation?
Q7. Please explain your view of the organisation's innovation capabilities?

These questions are to be the main body of the interview and we might veer into directions of further interest that may surface during the conversation.

You're welcome to contact Dr.Mira Slavova, my supervisor, should you have any queries.

Her details:
Dr Mira Slavova
Research Supervisor
Email mira@mmd4d.org
Phone 0784440124

I sincerely hope that (Company name) could spare a half an hour during the next week!

Hope to hear from you soon.

Kind regards,
Harald Richter
0825790458

Appendix II: Informed Consent Letter

Dear Prospective Participant,

I am an MBA student at the Gordon Institute of Business Science and currently conducting research on Innovation, and am trying to find out more about the prevalence of a portfolio of innovation capabilities.

I would appreciate your assistance and expertise in finding clarity on the subject and would like to enquire about the possibility of granting me an interview. Our interview is expected to last about an hour, and will help us understand what mix of innovation capabilities are mostly applied during the innovation process. ***Your participation is voluntary and you can withdraw at any time without penalty****. Of course, all data will be kept confidential. If you have any concerns, please contact my supervisor or I.*

Our details are provided below.

Harald Richter
Researcher
Email 99104734@mygibs.co.za
Phone 0825790458

Dr Mira Slavova
Research Supervisor
Email mira@mmd4d.org
Phone 0784440124

Signature of participant: _____
Date: _____

Signature of researcher: _____

Date: _____

Appendix III: Interview Schedule

List of questions to Innovation Team Leaders and members:

Q1. How do you find the organisation's culture towards innovation?

Q2. Kindly explain the company's innovation strategy?

Q3. Which innovation methods do you apply?

Q4. Please tell me more about your organisation's innovation capabilities?

Q5.

1. Does your organisation make use of a portfolio of innovation capabilities?

b) How do you find the organisation's culture towards innovation?

c) Kindly explain the company's innovation strategy?

d) Which innovation methods do you apply?

e) Please tell me more about your organisation's innovation capabilities?

f) Does your organisation make use of a portfolio of innovation capabilities?

List of questions to CEO's:

Q1.How do you find the organisation's culture towards innovation?

Q2. Kindly explain the company's innovation strategy?

Q3. Which innovation methods do you apply?

Q4. Please tell me more about your organisation's innovation capabilities?

Q5.

Appendix IV: Ethical Clearance Letter

Dear Harald Richter

Protocol Number: **Temp2015-02354**

Title: **Identifying the presence of a portfolio of innovation capabilities in South African innovation organizations.**

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

You are therefore allowed to continue collecting your data.

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

Kind Regards,
Adele Bekker

Appendix V: Data Sheets

Codes: Code Book

Number of Codes: 174

Code Info	Comment	Author
10	[no entry]	Harald Richter
CEO	[no entry]	Harald Richter
Culture	[no entry]	Harald Richter
DNA	[no entry]	Harald Richter
Horizon 1	[no entry]	Harald Richter
Horizon 2	[no entry]	Harald Richter
IT	[no entry]	Harald Richter
Idea Generation	[no entry]	Harald Richter
People	[no entry]	Harald Richter
R & D	[no entry]	Harald Richter
RND	[no entry]	Harald Richter
Risk	[no entry]	Harald Richter
acquired	[no entry]	Harald Richter
acquisition	[no entry]	Harald Richter
adapt	[no entry]	Harald Richter
agile	[no entry]	Harald Richter
agility	[no entry]	Harald Richter
all the time	[no entry]	Harald Richter
annual	[no entry]	Harald Richter
attitude	[no entry]	Harald Richter

award		[no entry]	Harald Richter
basis		[no entry]	Harald Richter
bi-annually		[no entry]	Harald Richter
big data		[no entry]	Harald Richter
bonus		[no entry]	Harald Richter
bottom up		[no entry]	Harald Richter
bought		[no entry]	Harald Richter
box		[no entry]	Harald Richter
budget		[no entry]	Harald Richter
buy		[no entry]	Harald Richter
buy-in		[no entry]	Harald Richter
capital		[no entry]	Harald Richter
change		[no entry]	Harald Richter
clients		[no entry]	Harald Richter
close		[no entry]	Harald Richter
cloud		[no entry]	Harald Richter
colab		[no entry]	Harald Richter
collaboration		[no entry]	Harald Richter
communicate		[no entry]	Harald Richter
communication		[no entry]	Harald Richter
competition		[no entry]	Harald Richter
competitive		[no entry]	Harald Richter
continuous		[no entry]	Harald Richter
customer		[no entry]	Harald Richter
customer centric		[no entry]	Harald Richter
customer experience		[no	Harald

		entry]	Richter
customer needs		[no entry]	Harald Richter
customer service		[no entry]	Harald Richter
cycle		[no entry]	Harald Richter
daily		[no entry]	Harald Richter
decision		[no entry]	Harald Richter
different		[no entry]	Harald Richter
differentiation		[no entry]	Harald Richter
digital		[no entry]	Harald Richter
digitization		[no entry]	Harald Richter
directors		[no entry]	Harald Richter
disconnect		[no entry]	Harald Richter
disruptive		[no entry]	Harald Richter
dynamic capability		[no entry]	Harald Richter
employee		[no entry]	Harald Richter
enable		[no entry]	Harald Richter
encourage		[no entry]	Harald Richter
engage		[no entry]	Harald Richter
everybody		[no entry]	Harald Richter
everyone		[no entry]	Harald Richter
exco		[no entry]	Harald Richter
execute		[no entry]	Harald Richter
executive		[no entry]	Harald Richter
experience		[no entry]	Harald Richter
external		[no entry]	Harald Richter
failures		[no entry]	Harald Richter

fast		[no entry]	Harald Richter
faster		[no entry]	Harald Richter
feedback		[no entry]	Harald Richter
filter		[no entry]	Harald Richter
filtered		[no entry]	Harald Richter
filtration		[no entry]	Harald Richter
financial		[no entry]	Harald Richter
flat		[no entry]	Harald Richter
flat structures		[no entry]	Harald Richter
flexible		[no entry]	Harald Richter
forecast		[no entry]	Harald Richter
funding		[no entry]	Harald Richter
future		[no entry]	Harald Richter
gap		[no entry]	Harald Richter
gate		[no entry]	Harald Richter
guys at the top		[no entry]	Harald Richter
heads		[no entry]	Harald Richter
hierarchical structures		[no entry]	Harald Richter
horizon 3		[no entry]	Harald Richter
hub		[no entry]	Harald Richter
human capital		[no entry]	Harald Richter
idea		[no entry]	Harald Richter
ideate		[no entry]	Harald Richter
ideation		[no entry]	Harald Richter
in 5 years		[no entry]	Harald Richter
incentive		[no	Harald

		entry]	Richter
incubation		[no entry]	Harald Richter
innovation capability		[no entry]	Harald Richter
innovation strategy		[no entry]	Harald Richter
inorganic		[no entry]	Harald Richter
inorganic growth		[no entry]	Harald Richter
insource		[no entry]	Harald Richter
institutional memory		[no entry]	Harald Richter
internal		[no entry]	Harald Richter
investment		[no entry]	Harald Richter
knowledge sharing		[no entry]	Harald Richter
lag		[no entry]	Harald Richter
leader		[no entry]	Harald Richter
leadership		[no entry]	Harald Richter
leverage		[no entry]	Harald Richter
long term		[no entry]	Harald Richter
look forward		[no entry]	Harald Richter
managers		[no entry]	Harald Richter
mindset		[no entry]	Harald Richter
minimum viable		[no entry]	Harald Richter
mis-communication		[no entry]	Harald Richter
mix		[no entry]	Harald Richter
money		[no entry]	Harald Richter
monthly		[no entry]	Harald Richter
needs		[no entry]	Harald Richter
once a month		[no entry]	Harald Richter

ongoing		[no entry]	Harald Richter
operational capability		[no entry]	Harald Richter
organic growth		[no entry]	Harald Richter
outsource		[no entry]	Harald Richter
partners		[no entry]	Harald Richter
partnership		[no entry]	Harald Richter
patient		[no entry]	Harald Richter
platform		[no entry]	Harald Richter
power distance		[no entry]	Harald Richter
process		[no entry]	Harald Richter
product		[no entry]	Harald Richter
product development		[no entry]	Harald Richter
product innovation		[no entry]	Harald Richter
quick		[no entry]	Harald Richter
quickly		[no entry]	Harald Richter
rapid		[no entry]	Harald Richter
relay		[no entry]	Harald Richter
research and development		[no entry]	Harald Richter
resources		[no entry]	Harald Richter
responsive		[no entry]	Harald Richter
reward		[no entry]	Harald Richter
scale		[no entry]	Harald Richter
screened		[no entry]	Harald Richter
service		[no entry]	Harald Richter
service innovation		[no entry]	Harald Richter
sharing		[no	Harald

		entry]	Richter
silo		[no entry]	Harald Richter
size		[no entry]	Harald Richter
slow		[no entry]	Harald Richter
software		[no entry]	Harald Richter
solution		[no entry]	Harald Richter
speed		[no entry]	Harald Richter
spend		[no entry]	Harald Richter
staff		[no entry]	Harald Richter
strategy		[no entry]	Harald Richter
sub-segment		[no entry]	Harald Richter
support		[no entry]	Harald Richter
techniques		[no entry]	Harald Richter
technology		[no entry]	Harald Richter
thinkers		[no entry]	Harald Richter
time frame		[no entry]	Harald Richter
time to market		[no entry]	Harald Richter
tomorrow		[no entry]	Harald Richter
top down		[no entry]	Harald Richter
trends		[no entry]	Harald Richter
user		[no entry]	Harald Richter
user experience		[no entry]	Harald Richter
value added service		[no entry]	Harald Richter
value offering		[no entry]	Harald Richter
value proposition		[no entry]	Harald Richter
weekly		[no entry]	Harald Richter

yearly	■	[no entry]	Harald Richter

Appendix VI: List of Codes and Associated Groups

Codes	Code Groups
10	Future focused
CEO	Leadership ability
Culture	Importance of culture
DNA	Importance of culture
Horizon 1	Future focused
Horizon 2	
IT	Technology ability
Idea Generation	Innovation platform
People	Human ability
R & D	Financial ability
RND	Financial ability
Risk	Importance of culture
acquired	Acquisition focused
acquisition	Acquisition focused
adapt	Organisational agility
agile	Organisational agility
agility	Organisational agility
all the time	Importance of culture
annual	Importance of culture
attitude	Importance of culture
award	Importance of culture
basis	Importance of culture
bi-annually	Importance of culture
big data	Technology ability
bonus	Importance of culture
bottom up	Human ability
bought	Acquisition focused
box	Human ability
budget	Financial ability
buy	Financial ability
buy-in	Leadership ability
capital	Financial ability
change	Organisational agility

clients	Customer centricity
close	Leadership ability
cloud	Technology ability
co-lab	Importance of culture
collaboration	Knowledge sharing
communicate	Communication
communication	Communication
competition	Importance of culture
competitive	Importance of culture
continuous	Importance of culture
customer	Customer centricity
customer centric	Customer centricity
customer experience	Customer centricity
customer needs	Customer centricity
customer service	Customer centricity
cycle	Importance of culture
daily	Communication
decision	Speed ability
different	Importance of culture
differentiation	Importance of culture
digital	Technology ability
digitization	Technology ability
directors	Leadership ability
disconnect	Communication
disruptive	Future focused
dynamic capability	Organisational agility
employee	Human ability
enable	Importance of culture
encourage	Importance of culture
engage	Importance of culture
everybody	Human ability
everyone	Human ability
exco	Leadership ability
execute	Importance of culture
executive	Leadership ability
experience	Importance of culture
external	Knowledge sharing
failures	Importance of culture
fast	Organisational agility

faster	Organisational agility
feedback	Communication
filter	Innovation platform
filtered	Innovation platform
filtration	Innovation platform
financial	Financial ability
flat	Leadership ability
flat structures	Leadership ability
flexible	Organisational agility
forecast	Future focused
funding	Financial ability
future	Future focused
gap	Speed ability
gate	Innovation platform
guys at the top	Leadership ability
heads	Leadership ability
hierarchical structures	Leadership ability
horizon 3	Future focused
hub	Importance of culture
human capital	Human ability
idea	Innovation platform
ideate	Innovation platform
ideation	Innovation platform
in 5 years	Future focused
incentive	Financial ability
incubation	Innovation platform
innovation capability	Organisational agility
innovation strategy	Importance of culture
inorganic	Acquisition focused
inorganic growth	Acquisition focused
insource	Importance of culture
institutional memory	Importance of culture
internal	Importance of culture
investment	Financial ability
knowledge sharing	Knowledge sharing
lag	Speed ability
leader	Leadership ability
leadership	Leadership ability
leverage	Organisational agility

long term	Future focused
look forward	Future focused
managers	Leadership ability
mind-set	Importance of culture
minimum viable	Speed ability
miscommunication	Communication
mix	Innovation platform
money	Financial ability
monthly	Communication
needs	Customer centricity
once a month	Communication
ongoing	Importance of culture
operational capability	Organisational agility
organic growth	Importance of culture
outsource	Knowledge sharing
partners	Knowledge sharing
partnership	Knowledge sharing
patient	Customer centricity
platform	Innovation platform
power distance	Leadership ability
process	Innovation platform
product	Customer centricity
product development	Customer centricity
product innovation	Customer centricity
quick	Speed ability
quickly	Speed ability
rapid	Speed ability
relay	Communication
research and development	Financial ability
resources	Financial ability
responsive	Communication
reward	Financial ability
scale	Organisational agility
screened	Innovation platform
service	Customer centricity
service innovation	Customer centricity
sharing	Knowledge sharing
silo	Organisational agility
size	Speed ability

slow	Speed ability
software	Technology ability
solution	Customer centricity
speed	Speed ability
spend	Financial ability
staff	Human ability
strategy	Importance of culture
sub-segment	Organisational agility
support	Importance of culture
techniques	Innovation platform
technology	Technology ability
thinkers	Human ability
time frame	Speed ability
time to market	Speed ability
tomorrow	Communication
	Speed ability
top down	Leadership ability
trends	Future focused
user	Customer centricity
user experience	Customer centricity
value added service	Customer centricity
value offering	Customer centricity
value proposition	Customer centricity
weekly	Communication
yearly	Importance of culture

Appendix VII: List of Code Groups and their Members

Code Group	Codes
Acquisition focused	bought, inorganic growth, Acquisition, acquired
Communication	daily, communication, relay, disconnect, monthly, tomorrow, once a month, communicate, feedback, weekly, responsive, miscommunication
Customer centricity	customer centric, service, needs, value, proposition, customer, customer needs, value added, service, product, innovation, user, patient, customer service, solution, user experience, value offering, clients, customer experience, service innovation, product development, product
Financial ability	resources, spend, investment, incentive, capital, RND, money, reward, research and development, buy, funding, R & D, budget, financial
Future focused	future, in 5 years, long term, look forward, horizon 3, Horizon 1, disruptive, forecast, trends, 10
Human ability	human capital, everybody, thinkers, everyone, employee, box, bottom up, staff, People
Importance of culture	competitive, internal, award, cycle, engage, encourage, enable, basis, insource, bottom up, strategy, annually, experience, bonus, all the time, mind-set, execute, Culture, DNA, failures, support, differentiation, Institutional memory, annual, different, ongoing, innovation strategy, competition, hub, yearly, organic growth, continuous, co-lab, Risk
Innovation platform	innovation strategy, techniques, idea, process, ideate, filtration, platform, filter, gate, filtered, incubation, screened, mix, ideation, Idea generation
Knowledge sharing	partnership, external, partners, sharing, outsource, knowledge sharing, collaboration
Leadership ability	flat structures, leadership, close, exco, buy-in, top down, managers, power distance, flat, leader, directors, hierarchical structures, heads, executive, CEO, guys at the top
Organisational agility	sub-segment, operational capability, flexible, innovation capability, change, agility, silo, scale, faster, fast, dynamic capability, agile, leverage, adapt

Speed ability	gap, speed, quick, rapid, slow, time frame, minimum viable, tomorrow, quickly, size, lag, time to market, decision
Technology ability	software, big data, cloud, digitisation, technology, digital, IT

Appendix VIII: List of Codes by Document

No. of Documents: 15
Average Number of Quotes: 259
Document Codes Used

[1] **HEAD OF HEALTH RESEARCH AND DEVELOPMENT – INSURANCE & FINANCIAL SERVICES 1.docx**
10
CEO
Culture
IT
Idea Generation
People
R & D
Risk
acquired
all the time
annual
attitude
basis
big data
budget
buy
change
clients
close
communication
competition
customer
customer centric
customer experience
cycle
decision
different
disruptive
dynamic capability
enable
encourage
everybody
exco
executive
experience
external

fast
faster
filter
filtered
funding
gate
hub
idea
ideate
ideation
innovation capability
innovation strategy
internal
knowledge sharing
leader
leadership
mix
money
monthly
needs
operational capability
patient
platform
process
product
product innovation
quick
quickly
rapid
research and development
resources
reward
service
service innovation
sharing

solution
speed
spend
strategy
support
techniques
technology
top down
weekly

[2] **GROUP EXECUTIVE OF TECHNOLOGY AND STRATEGY – TECHNOLOGY ORGANISATION 1.docx**
10
CEO
Culture
IT
People
R & D
Risk
acquired
acquisition
agility
award
bi-annually
big data
bonus
bottom up
bought
box
budget
buy
capital
change
close
collaboration
communication
competitive
customer
cycle
different
failures
financial
funding
future
hub
human capital
idea
ideation
incubation
innovation strategy
internal
investment
knowledge sharing
mindset
mix
money
needs
organic growth
partners
partnership
platform
process

product
product development
product innovation
quick
quickly
service
sharing
silo
software
solution
spend
strategy
support
technology
tomorrow
trends

[3] **HEAD OF PRODUCT GROWTH & PROJECTS – BANKING INSTITUTION 1 .docx**
10
CEO
Culture
DNA
IT
People
Risk
acquired
adapt
agile
agility
annual
award
basis
bi-annually
big data
bonus
bottom up
bought
capital
change
collaboration
communication
competition
competitive
customer
customer centric
daily
decision
different
digitization
dynamic capability
enable
encourage
everyone
exco
execute
executive
experience
external
future
gap
gate
heads
human capital
idea
ideation
innovation capability
innovation strategy
insource
internal
investment
leader
leadership
leverage
money
needs
outsource
platform
process
product
quick
responsive
reward
scale
service
sharing
silo
size
slow
software
solution
speed
spend
strategy
support
top down

[4] **CEO – NETWORKING SOLUTIONS ORGANISATION 1.docx**
10
CEO
Culture
DNA
People
acquired
acquisition
adapt
agility
all the Time
bi-annually
big data
bought
box
buy
capital
change
cloud
communicate
communication
continuous
customer
different
differentiation
digital
dynamic capability
enable
engage
external
forecast
future
hub
idea
innovation capability
innovation strategy
internal
leader
leadership
managers
money
needs
ongoing
outsource
power distance
process
product
quick
quickly
service

slow
solution
speed
spend
strategy
technology
tomorrow
trends

[5] **CEO – AVIATION ORGANISATION.docx**
10
Culture
IT
People
Risk
acquired
all the Time
annual
attitude
award
basis
big data
bonus
bottom up
bought
budget
buy
capital
change
clients
communicate
communication
competition
continuous
customer
customer service
cycle
decision
different
employee
everybody
everyone
exco
executive
experience
fast
faster
financial
flat
human capital
idea
innovation capability
innovation strategy
institutional memory
investment
leader
leadership
managers
money
monthly
operational capability
outsource
platform
process
product
quick
quickly
reward
service
size
slow
software
solution
spend
staff
strategy
technology
top down

[6] **CEO – GAMING & ACCOMMODATION ORGANISATION.docx**
10
CEO
Culture
DNA
People
RND
Risk
acquired
annual
attitude
big data
bottom up
bought
box
buy
change
clients
close
communication
competition
continuous
customer
customer experience
cycle
decision
different
digital
employee
encourage
engage
everybody
experience
external
fast
financial
flat
gate
idea
innovation strategy
internal
lag
look forward
mindset
money
needs
outsource
platform
product
quick
rapid
reward
service
size
software
speed
spend
staff
strategy
technology
top down
trends

[7] **MANAGING DIRECTOR – INTERNET PAYMENT FIRM.docx**
10
Culture
People
R & D
acquired
agile
all the Time

basis
big data
box
budget
capital
close
cloud
communicate
communication
competition
customer
daily
different
disconnect
employee
encourage
everybody
experience
financial
idea
ideation
incentive
innovation strategy
leverage
minimum viable
money
needs
process
product
quick
quickly
relay
service
sharing
size
slow
spend
staff
strategy
support
weekly

[8] **GROUP AGILE LEAD – BANKING INSTITUTION 2.docx**
10
CEO
Culture
People
R & D
Risk
acquired
acquisition
adapt
agile
agility
all the Time
attitude
basis
bi-annually
big data
bottom up
buy
buy-in
capital
change
close
cloud
co-lab
collaboration
communication
competition
competitive
continuous
customer
customer centric
decision
different
dynamic capability
employee
enable
everybody
exco
experience
external
fast
faster
financial
flat
flat structures
flexible
funding
future
gap
hierarchical structures
human capital
idea
ideation
in 5 years
innovation strategy
internal
investment
knowledge sharing
leader
leadership
look forward
minimum viable
miscommunication
money
needs
operational capability
platform
process
product
quick
quickly
research and development
resources
service
sharing
silo
size
slow
speed
spend
strategy
support
technology
Time frame
top down
trends
user
user experience

[9] **HEAD OF STRATEGY FORMULATION – ENERGY SECTOR.docx**
10
Culture
People
R & D
Risk
acquired
acquisition
agility
basis
bi-annually
big data
bottom up
box
budget
capital
collaboration
continuous
customer
customer centric

cycle
different
disruptive
funding
future
gate
human capital
idea
innovation strategy
inorganic growth
knowledge sharing
leader
leadership
long term
money
needs
organic growth
partners
partnership
process
product
product development
quick
research and development
resources
screened
service
sharing
silo
solution
spend
strategy
support
technology
value added service

[10] **PRODUCT & INNOVATION MANAGER - TECHNOLOGY ORGANISATION 2.docx**
10
CEO
Culture
IT
People
R & D
Risk
acquired
attitude
basis
big data
bonus
boWom up
box
budget
buy
communication
competition
customer
customer centric
daily
decision
different
digital
disruptive
employee
exco
executive
failures
fast
feedback
filter
funding
future
idea
ideate
ideation
innovation capability
innovation strategy
internal
investment
knowledge sharing
lag
leader
leadership
leverage
minimum viable
money
needs
operational capability
outsource
partners
partnership
platform
process
product
product development
quick
rapid
resources
service
sharing
slow
speed
spend
staff
strategy
support
technology
tomorrow
top down

[11] **MANAGING DIRECTOR – INSURANCE & FINANCIAL SERVICES 2.docx**
10
Culture
People
Risk
acquired
big data
box
budget
capital
change
clients
continuous
customer
customer experience
customer needs
decision
different
digital
digitization
directors
disruptive
employee
encourage
everyone
exco
experience
external
fast
faster
feedback
flat
gate
idea
ideation
innovation strategy
leader
leverage
mix
needs

power distance
process
product
quick
quickly
service
software
solution
speed
spend
staff
strategy
value offering
value proposition
weekly

[12] **CEO - MOBILE GATEWAY FIRM.docx**

10
Culture
DNA
People
Risk
basis
bi-annually
big data
change
clients
close
collaboration
continuous
customer
customer needs
daily
different
execute
fast
faster
gate
idea
innovation strategy
investment
leader
leadership
money
monthly
needs
process
product
resources
scale
service
size
strategy
weekly

[13] **INNOVATION MANAGER – CONSULTANCY FIRM.docx**

10
CEO
Culture
IT
People
RND
acquired
all the Time
basis
big data
box
budget
buy
change
clients
collaboration
communication
competitive
continuous
customer
decision
different
disruptive
encourage
engage
everybody
everyone
execute
executive
experience
external
fast
faster
filter
filtered
filtration
funding
future
gap
gate
idea
ideation
innovation capability
innovation strategy
internal
leader
leadership
leverage
mix
money
platform
process
product
quick
quickly
rapid
scale
service
solution
speed
spend
strategy
sub-segment
support
technology
thinkers
trends
user
user experience
value proposition

[14] **DIGITAL TRANSFORMATION & INNOVATION LEAD – PUBLISHING ORGANISATION.docx**

10
Culture
IT
People
acquired
acquisition
agile
agility
basis
bi-annually
big data
bottom up
budget
capital
change
clients
communicate
communication

competitive
continuous
customer
customer centric
customer needs
decision
different
digital
directors
disruptive
employee
engage
everybody
executive
external
feedback
financial
flat
flexible
heads
human capital
idea
innovation strategy
insource
internal
knowledge sharing
lag
leader
leadership
leverage
mix
money
needs
outsource
partners
platform
process
product
product development
quick
resources
service
sharing
silo
solution
staff
strategy
support
technology
trends
value proposition

[15] **INCUBATION GENERAL MANAGER – NETWORKING SOLUTIONS ORGANISATION 2.docx**

10
CEO
Culture
Horizon 1
IT
People
R & D
Risk
acquired
all the Time
basis
big data
bought
box
budget
buy
capital
change
clients
close
cloud
competition
competitive
continuous
customer
customer centric
cycle
different
disconnect
disruptive
engage
everybody
everyone
exco
execute
executive
experience
fast
filter
filtered
financial
flat
future
gate
guys at the top
horizon 3
idea
ideation
in 5 years
incubation
innovation strategy
internal
lag
leader
leadership
long term
mix
money
needs
process
product
quick
quickly
rapid
resources
scale
service
silo
size
solution
speed
spend
staff
strategy
support
technology
Time to market

Appendix IX: Cross-Tabulation of Organisations interviewed and relevant Innovation Capabilities

	Innovation Culture	Customer Centricity	Innovation Platform	Organisational Agility	Human Capital Capab	Technological Ability	Financial Resources	Future Focus	Leadership Capability	Knowledge Sharing	Communication	Total Capabilities in portfolio
Gaming & Accom	1	1	0	1	1	1	1	1	1	1	1	10
Internet Payment	1	1	0	1	1	1	0	1	1	0	1	8
Mobile Gateway	1	1	0	0	0	1	1	1	1	0	1	8
Aviation	1	1	1	0	1	1	0	0	1	0	1	7
Networking Solutions	1	1	1	1	1	1	1	1	1	1	1	11
Banking Institution 1	1	1	1	1	1	1	1	1	1	1	1	11
Banking Institution 2	0	1	1	1	0	1	1	1	0	0	0	6
Networking Solutions	1	0	0	1	0	1	1	1	11	1	1	8
Consultancy	1	1	1	0	1	0	1	0	1	0	1	6
Insurance & Fin 2	1	1	1	1	1	1	0	0	1	0	1	8
Publishing	1	0	0	0	1	1	0	0	1	0	1	6
Technology 2	1	1	1	1	1	11	1	1	1	0	1	10
Insurance & Fin 1	1	1	1	1	1	1	1	1	1	1	1	11
Energy	1	0	0	1	0	1	1	1	1	1	1	8
Technology 1	1	1	1	1	1	1	1	1	1	1	1	11
Capability Prevalence	14	13	8	11	11	14	11	11	14	7	14	