The Environments that Foster Transformative Innovation:

A qualitative study exploring the intersection between Radical and Disruptive Innovations

By

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Declaration

I confirm that this is my own work and the use of all material from other sources has been properly and fully acknowledged.

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There are so many people who were a part of this unexpected journey and it is difficult to fully articulate the rich and multi-faceted impact they left on my work. From discourse to friendship, from constructive criticism to a friendly ear lent, there were a variety of individuals who left some sort of mark on me, ultimately leaving an indelible imprint on my work.

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Definitions

ICT:	Information And Communication Technology
IRR:	Internal Rate Of Return
NPD:	New Product Development
P-A-D-R:	Prospector-Analyzer- Defender-Reactor Typology
ROI:	Return On Investment
RPI:	Radical Product Innovation
RPIC:	Radical Product Innovation Capability
RPV:	Resources, Processes, And Values
R&D:	Research And Development
TA:	Thematic Analysis
VCE:	Value Chain Evolution Theory

Abstract

The past 50 years have significantly changed the way we live our lives and interact with the world, all of it driven by the massive force of technological innovation. In order to understand what is driving this change and subsequent success, we have to examine the technological organizations at the forefront of this change. This change is not driven by organizations that are complacent and working within traditional product lifecycles. Instead, we see organizations that are willing to cannibalize themselves in order to push technology and humanity forward. So how do you pick which one is more or less likely to succeed when at first glance they all appear similar? The talent is vast, the hunger is limitless, the notion or appreciation of profitability is secondary to best.

Innovation is key to the next generation of technologies and to the way we engage with the world. Disruptive innovation looks at how new entrants are able to challenge established firms whereas radical innovation looks at the creation of novel products or ideas. Extensive research has been conducted in both areas with one recurring antecedent: there are a variety of interconnected variables and complexities that work together to yield successful innovation. I postulate that the weakness of current innovation literature lies in either taking a more focused approach by reviewing innovation capability, or by integrating two aspects. This approach misses broader implications and whether or not the ability to innovate is tied to long-term success. A bulk of current innovation literature tends to focus on the product development process as it is the key element driving a firm's ability to develop innovative products. In my opinion, this has propelled the majority of research to focus on improving this process as opposed to understanding the dynamics at the firm level. The purpose of this work is to explore the intersection between disruptive and radical innovations and attempt to understand what, if anything, can delineate which organizations are more likely to succeed amongst organizations that are both innovative and focused on disruption. The complexities surrounding the innovation phenomenon and the continual validation of the interplay between a variety of factors directed this research to take a qualitative approach in an effort to more deeply explore potential variables that lead to success.

The contributions of this research identify that innovative organizations that have the highest likelihood of success should at a minimum focus on innovation with tight integration at the product development level in order to continuously exploit and examine relevant markets in a quest for new opportunities. All factors remaining equal this work posits that organizations that are more likely to succeed will have the additional attributes of a trust-oriented, functionally secretive environment that welcomes failure with a minimum management hierarchy.

Chapter 1: Introduction

The emergence of billion-dollar companies has always been fascinating. To practitioners and academics alike, it has been a challenge to uncover what explains this phenomenon. What differentiates the companies that have been able to become successful billion dollar companies from those that have not? Does their innovation culture, corporate structure, leadership, organizational climate, and other features contribute to this distinction? This research will strive to open the proverbial black box and provide clarity on the systematic attributes of the most successful firms.

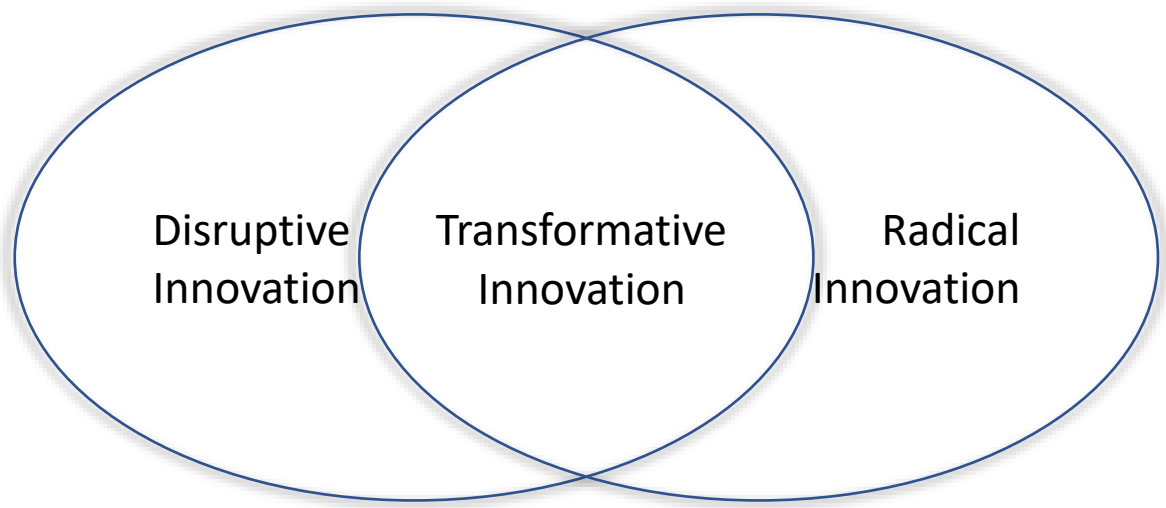
1.1 The research focus

Innovation is a vast field that spans both management research and mainstream literature. This creates a variety of ambiguities when trying to provide context with respect to innovation research. The term itself has a variety of meanings, depending on the lens of the author or the research approach undertaken. In the context of this research, I will deal with the concepts of disruptive innovation, radical innovation, and transformative innovation. A review of management literature (Christensen et al., 2015; Hopp et al., 2018) defined disruptive innovation as a process by which new entrants challenge established firms, in some cases by creating new markets, whereas radical innovation is the creation of completely novel products or ideas. Taking a closer look at the research behind these definitions, I would argue that there is room for an additional, or more refined definition. Christensen's (1997) seminal work on disruptive innovation defines innovation within two contexts: a technology that disrupts and appends market leaders or creates new markets. This definition is incomplete and perhaps too broad as it can encompass a variety of technologies; it can also be confusing to compare a radical innovation to a disruptive one. Juxtaposing radical innovation and disruptive innovation yields a slight intersection wherein the overlap between the two produces a new definition of an innovation, in which innovation involves both creating new markets and the concept of novelty itself, i.e. innovation is both radical and disruptive simultaneously. This more refined definition is a contribution to innovation literature.

This research defines this type of innovation as a transformative innovation, i.e. an innovation that is both new and novel (radical) and one that creates disruptive (where

disruption can take form as drastically altering a variety of existing industries to create a new market or significantly interrupting the way we live, work, or play) new markets. Stated differently, a transformative innovation is an innovation that has a profound impact on the way we work, live or play. For the purposes of this work, the terms radical innovation and disruptive innovation will be used frequently as the majority of the literature surveyed uses the term radical innovation. This work is specifically focused on the intersection of radical and disruptive innovations and I bring to the literature a refined definition of innovation, namely transformative innovation, as seen in Figure 1.1.

Figure 1.1 Transformative Innovation



Management research has looked extensively at innovation and the drivers behind successful innovations. One of the key findings is that there are a variety of complexities and variables that interact to lead to success, and in many cases, are difficult to quantify. Slater et al., (2014) conclude this very point in their comprehensive review of radical innovation. In his latest work, Christensen et al., (2015) makes a similar statement, suggesting that while companies are in the pursuit of profitability, “there is no causal mechanism to link the observed association between circumstances and market leadership outcomes” (p.8). It is the goal of this research to align with this innovative research and attempt to pry open the black box of innovation to allow for the investigation of causal links between radical innovation and organizational success, i.e. market leadership outcomes.

This chapter presents the context of this study, including the environment for the research, and the associated complexities. It aligns with the current interests in the field of innovation and the rationale for this research. The aims and objectives of the research are presented. The chapter concludes with an overview of the structure of this thesis.

1.1.1 Central research question

The focus of this research is to take a deeper dive into organizations that have created an enterprise value of at least a billion dollars and transformed our lives in terms of the way we work, live, or play. To explore this phenomenon, it was imperative to select an industry that was characteristic of this type of transformation while also lending itself to collectible data. The smartphone industry became the entry point for this research, leading us to our central question: "Does the study of successful and unsuccessful smartphone companies yield distinct characteristics within the organizational culture of the successful companies?"

The ultimate win for this research would be generalizability from an analytical stance, that would then lead to the ability to better predict which organizations are more or less likely to be successful. There are always factors that cannot be accounted for but given all things remaining equal, if we are able to understand which factors differentiate those organizations that become successful, we may be able to apply the same metrics to newer organizations that are going after game-changing markets. This would provide a valuable fount of information for both company leaders and venture capitalists. This premise does not imply that all companies can be successful by simply implementing the vision and strategies discussed herein. There are a variety of factors that must first exist before a company has a shot at becoming the next big firm, such as the market itself, whether or not the market is ready for disruption, the vision of the founders or the company, the resources available, etc. This research is applicable when these circumstances and others are in place or will clearly be in place. Ultimately, the combination of circumstances and the strategies that successful companies employ are not easily replicable.

1.2 Research motivation

The drive for this research came from my experience as a venture capitalist, founder, and innovator. When deciding whether to invest into a particular start-up, having a better understanding of the environment which gives rise to successful and transformative innovations would be invaluable. Further, having this understanding would help those in start-ups and innovative companies more generally understand frameworks that have been associated with successful and innovative companies, and hence inform many dimensions of corporate strategy. It is, of course, important to understand the distinction between correlation and causation. That is, simply emulating the activities of the most successful and innovative companies does not necessarily translate to success. As such, a very careful and deep understanding of the success factors must be developed and used to inform how to create similar environments that may also lead to similar successes.

1.3 The theoretical context

Research suggests that innovation in a company is the result of several key factors including its strategy, culture, organizational structure, and its employees (Abbie and Hauser, 1996; Christensen 1997; Christensen, Anthony and Roth 2004; Calantone and Rubera 2012; Cooper 1984; Kim and Mauborgne 2005, 2017; Miles and Snow 1978; Popa et al, 2017; Slater, Mohr and Sengupta, 2014; Vincent et al., 2004). Some focus on the organizational structure of firms and a balance between formalization and centralization, noting that a flat structure is the key to sustainable, not radical, innovation (Deshpande et al., 1993, Quinn and Rohrbaugh 1983; Slater et al., 2011). Others explore the impact that employees make towards the innovation culture of the firm, from the CEO (Christensen, Kaufman and Shih 2008; Govindarajan and Peters, 2011; Hamel and Prahalad, 2005) and down the corporate ladder to the front-end employees. This research identifies the impact of the CEO, the company's defined vision, the relationship between departments and cross-departmental integration, the level of trust among employees, the level of risk and failure tolerance, and personal movement within the company to understand the various ways the culture of innovation in a company could be affected. In all the aforementioned research, success itself was defined in slightly differing contexts but

generally tied to financial gain. When reviewing innovation and product development literature (Aggarwal, Bigelow and Singh, 2011; Griffin and Hauser, 1996; Kim et al., 2011; Tang and Liou, 2010) success can be defined in a multitude of ways but can ultimately be distilled into two categories: financial measures (break-even time, attain margin goals, attain profitability goals, IRR/ROI) and customer measures (customer satisfaction, met revenue goals, revenue growth, met market share goals, met unit sales goals). Success, as I define it, is sustainable market ownership, i.e. wherein an organization captures a significant percentage of the market and maintains it or grows its strong competitive advantage. Market share encompasses elements of both financial and customer measures. Specifically, market share combines margin and revenue with customer satisfaction. Ultimately, you cannot be a market leader with a significant market share unless you are both financially successful and meeting customer needs. This aligns well with the innovation literature. Christensen's (2006) definition of disruptive innovation suggests "that the business model in which technology gets deployed paralyzes incumbent leaders; in other words, [disruption] is not a technology problem, it is a business model problem" (p. 43), indicating that firms adopt structures that incubate disruptive innovations (Christensen et al., 2015). Slater et al.,'s (2014) definition of radical innovation success ties in to new product success from a profit perspective and its superiority over competitive offerings. The similarities of these definitions and their interconnectedness with my definitions, make market share ownership a good measure for success as it encompasses the key factors across innovation research.

While I will expand on the definitions and theories related to innovation in the literature review, I will position this research using the term "transformative innovation" versus "radical innovation" even though the former is not evident in the literature. I will use both definitions at times as transformative innovation is a subset of radical innovation and the former is not evident within the literature. Multidimensional definitions exist and are debated in the research and will be shared in the literature review. For the purposes of this study, I link transformative innovation, through radical innovation, to the acquisition of new knowledge and the development of new products for new customers or new markets (Benner and Tushman, 2003; Sheng and Chien, 2015). Radical innovation both destroys existing

market positions while broadening new opportunities (Aboulnasr, Narasimhan, Blair, and Chandy, 2008). The pursuit of radical innovation, particularly in relation to the internal organizational factors, requires the development of product features and benefits that are both unique and superior to existing products and markets. Ultimately, these radical innovations transform the way we work, live and play.

In order to explore the differences, it was essential to select a recent category that was widely accepted as a radical innovation, namely, the smartphone industry.

1.4 Smartphone platform industry overview

Before providing an overview of the respective smartphone platform companies that were researched, it is important to provide the context which influenced the decision to review these firms in the first place. In my quest to answer the research question proposed, I found that innovation theory in its present form focuses on explaining how existing firms are disrupted by smaller firms, because the organization structure of existing, larger firms impedes them from looking at a specific market. As an entrepreneur, I found that this theory does not hold true in certain cases, especially when the focus revolves around innovations that can fundamentally impact the way we live, work or play.

This necessitated a deeper dive into specific situations where the current innovation literature could not provide an answer and ultimately drove me towards undertaking this research so as to answer my proposed question. The smartphone platform industry is an example of an industry that has transformed many aspects of our lives and one on which multiple firms dedicate laser focus to, including market leaders and new entrants. The added advantage of looking at an innovation retrospectively is that it leads to a more thorough understanding of the context and factors that transpired to bring the innovation to fruition. For all these reasons, I focused on the smartphone platform industry to explore the environment that creates such innovations.

Before diving into the analysis, it is important to note the fundamental need to differentiate the successful firms from the unsuccessful ones - that is, it is imperative that the research not focus solely on the successful firms. Rather, the research must identify key differences between those firms that were successful from those that were unable to maintain their success. Furthermore, it is important to define success

and discuss the landscape of the smartphone industry and the mobile phone industry that directly preceded it. Success, as I define it for this work, is sustainable market ownership wherein market ownership is maintained or grown, i.e. one of the dominant players within a market or one that owns a substantial percentage of the market. Interestingly enough, all of the organizations I interviewed were directly focused on capturing the smartphone platform market. Current and former employees were interviewed from the following list of companies, as noted in Table 1.1:

Table 1.1: Smartphone companies in this study

Company	Location
Apple	Cupertino, California, US (Silicon Valley)
Blackberry	Waterloo, Canada
Google	Mountain View, California, US (Silicon Valley)
Motorola	Chicago, Illinois, US
Nokia	Mountain View, California, US (Silicon Valley)
Palm	Sunnyvale, California, US (Silicon Valley)
Samsung	San Jose, California, US
Sony	San Mateo, California, US

Palm, Nokia, Blackberry, and Motorola can claim to be the earliest entrants in the smartphone industry. What is also interesting about the smartphone industry is that some of the companies that first entered the market were also incredibly successful in the mobile phone industry, namely Nokia, Motorola, and Samsung.

It is important to understand this because one obvious conclusion could be that these organizations were more successful in the subsequent smartphone industry because they had already established dominance and hence had a head start and existing

deep expertise well in advance of other firms. In fact, the first successful smartphones were created by Blackberry and Palm, but their success was limited and eventually disappeared. Success for this work is defined as sustainable dominant market ownership, i.e. where an organization captures a major percentage of the market and maintains a dominant position and/or grows it. Again, the passing of time testified that even though these organizations were the first to enter the market, establish themselves, and create major success, they ultimately failed and were unable to sustain a dominant position. Today it is Apple and Google that dominate this market, the third and last, respectively,to enter this market successfully. A lack of success was not attributed to market focus, the lack of trying to innovate, the delayed market entry, or any of the traditional reasons that are generally accepted as an explanation as to why a firm was unable to establish or maintain itself. The failure for organizations that already had the technological or market edge was a product of firm culture and environment, as my data suggests. As such, I focused my deeper analysis and discussion on Blackberry, Apple, Palm, and Google. Blackberry and Palm were the most successful early entrants; Apple and Google are the ones that ultimately succeeded. It is important to delineate my bias as it pertains to the overview of each of the smartphone companies listed; as an outsider I am therefore providing overviews from my own perspective and experience.

1.4.1 Apple

Apple is a consumer technology company that focuses on developing sleek products that are ergonomically and aesthetically superior, but which have either below market or equivalent market performance. Apple has an incredibly strong brand and a massive marketing engine that is able to successfully position otherwise basic or inferior technology features as superior or radical, often times with technologies that are very late to the market. For example, face ID technology was available since 2015 on Windows phones. The company focuses on controlling all aspects of technology with minimal third-party integration. This ultimately creates a strong loyalty with consumers as it becomes both cost and time prohibitive to switch from their products to a different vendor.

1.4.2 Blackberry

Blackberry was one of the first successful smartphone companies. It differentiated itself on the technology side by focusing on business needs and security. Its primary focus was always technology and performance. Blackberry was a pioneer in email and longer communication as it mastered the ability to transmit long messages in an efficient way, reducing the data requirements at a time when data was expensive. Though it had early success, it eventually failed as it was unable to keep up with the market or maintain its position. Many of its technologies became stale quickly, further accelerating its decline.

1.4.3 Google

Google is a data and search company that is focused on innovation. It likes to develop cutting-edge technologies that can displace existing markets or technologies. Google's consumer products are minimalistic in nature and generally technologically superior but aesthetically inferior or equivalent to other technologies in the market. Google focuses on empowering individuals so that they are able to easily move from Google's technology to a competing technology. This creates a different type of loyalty where the customer has so much flexibility that they end up utilizing google technologies because their ability to move away is unencumbered. Google has been able to brand itself as a friendly consumer-oriented company which has successfully made users ignore the invasive way in which the company collects and stores copious amounts of user data.

1.4.4 Motorola

Motorola is a telecommunications and semiconductor company that pioneered wireless communications all the way back to the original walkie-talkie. It built some of the first cellular networks and the first mobile phones. It has primarily focused on performance and function, with aestetics taking a backseat. Motorola was always an early adopter in new technologies and more often than not a pioneer due to its deep expertise in semiconductor and chip/circuit technologies. In its later years, it tried to leverage branding and marketing more effectively.

1.4.5 Nokia

Nokia is a telecommunications and semiconductor company that was a pioneer in the mobile phone space. Much like Motorola, it created some of the first cellular networks and also helped establish the standards for cellular technologies. It was a major player in the first mobile phones and also the creator of some of the earliest smartphones.

1.4.6 Palm

Palm was a hardware and software company and a pioneer in the personal digital assistant space. It began its work by essentially creating a digital version of the traditional personal notebook that individuals use to manage appointments, contacts, etc. Palm then moved into the smartphone space and was one of the first companies to create a smartphone.

1.4.7 Samsung

Samsung is a computer technology and semiconductor firm whose technology spans across the consumer electronics space. Its core technology is in product hardware such as chips, memory, screens, etc. Samsung focuses on aesthetically appealing products that ergonomically are close to the best in each respective industry. It then uses its internal technology expertise to provide better performance and features compared to its more aesthetically appealing competitors. Samsung also leverages a huge branding and marketing engine to drive its end products.

1.4.8 Sony

Sony is a consumer electronics and semiconductor firm that was the first technology company to brand its end products as part of a lifestyle. It originally focused on cutting edge technology and great aesthetics. Sony always tries to push the envelope in each division and always launches a product with some key and unique feature that is otherwise missing from competitor products.

1.5 The research design

While quantitative research in this body of knowledge is evident, research that draws on the human perspective is limited. This study is an opportunity to carry out original research in this area and concentrates on the key factors related to the culture of innovation needed for radical product innovation capability. An inductive perspective was adopted, using the key findings from the literature review to identify key themes to explore with my participants.

The aims of this thesis were:

1. To identify the organizational factors that affect the process of innovation within an organization.
2. To explore the impact of organizational culture and structure on the success of the firm in the context of the smartphone platform industry.
3. To compare organizations to identify the differences between companies that have successful and sustained radical innovations from those that do not.

As such, the following two questions were posited to guide the research:

1. What are the key factors that define the culture of innovation of companies in the smartphone industry and that contribute to radical innovation?
2. Does a study of successful versus unsuccessful companies yield distinctive factors that impact their success?

In order to to pursue the aims of this study, exploratory, inductive research was conducted. As noted, the majority of research on this topic is quantitative, with a focus on outcomes such as profit. An exploratory, qualitative stance generates new data and insights.

The research design employed a thematic analysis methodology, one that is firmly recognized in the literature with the intent of producing findings that are valid. Data collection involved a semi-structured interview process to garner insights from 28 industry participants. Each interview was treated equally in the data analysis process to ensure consistency. A thorough explanation of this process will be provided in Chapter 3.

1.6 Thesis structure

This thesis has five chapters as described below in Table 1.2. The thesis structure follows the traditional approach (Remenyi and Bannister, 2012). A review of the literature and current thinking provided the framework for the research questions. From these, an appropriate research methodology and design was explored and employed. Data was collected, analyzed,and subsequent findings were shared and discussed. Conclusions were drawn and recommendations made. Finally, the contributions to both academia and management practice are discussed, including the limitations and recommendations for future research.

Table 1.2: Thesis structure

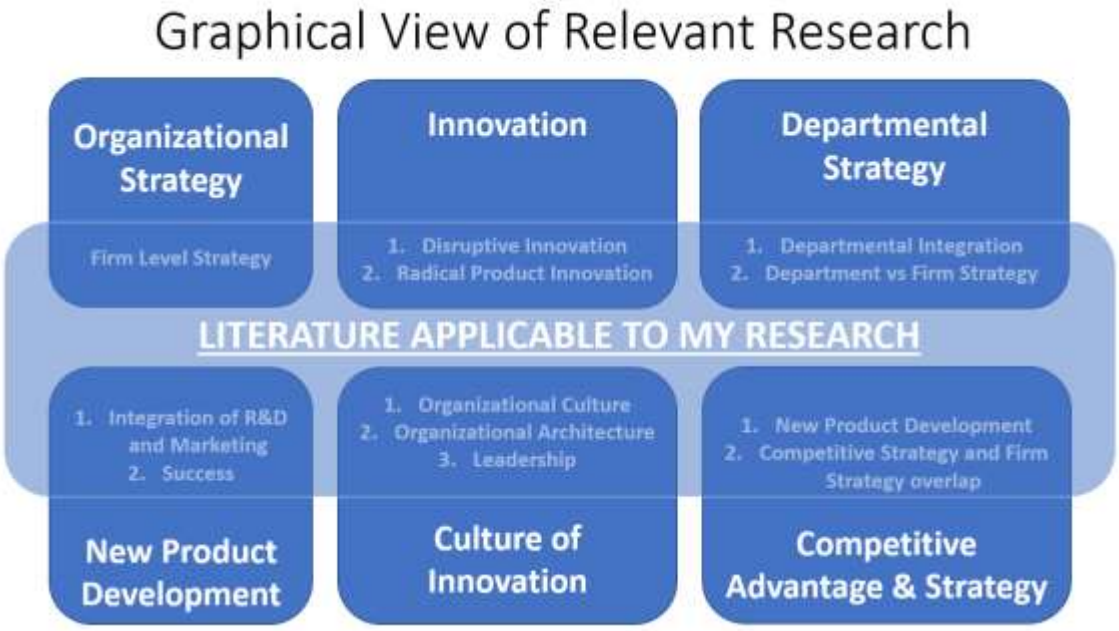
Chapter 1: Introduction	Introduces the study and the purpose of the research. A background and context of the research is provided, the general research questions are framed and the significance of the academic work is posited.
Chapter 2: Review of the Literature	The literature review explores key literature related to innovation, strategy, organizational culture and structures using both historical and current research on the topic under study. Firm factors for successful new product development (NPD) and radical product innovation (RPI) are also shared.
Chapter 3: Research Design and Methodology	Identifies the overall research strategy to answer the research questions. An overview of the research design, methodology and data collection methods and protocol are provided, as well as fieldwork design.
Chapter 4: Analysis and Discussion	Results of the data collection are presented, as well as subsequent analysis and the findings.
Chapter 5: Conclusion	The results are summarized along with the implications to both theory and managerial practice. Limitations are identified as well as recommendations for practice and future research.

Chapter 2: Literature Review

2.1 Introduction

The intent of this study is to explore the culture of innovation in transformational organizations to identify if there are distinct characteristics that are related to their success. In order to research and explore this key focus area - the differences between environments - it necessitates choosing a technology segment that is considered transformational. This study examines the smartphone industry through several streams of research, namely innovation, organizational strategy, departmental strategy with a focus on integration, competitive advantage and corporate culture. This literature review, while not exhaustive, provides a comprehensive background to the main research question and defines the key variables that will be explored. Noted gaps in current studies will be identified as opportunities for this current and future research. A graphical representation of the literature covered is depicted below. There are a variety of areas that are relevant to this study, and as such, it is important to delineate which specific topics are relevant within a given body of literature. The graphic, Figure 2.1, though not exhaustive, is an attempt to illustrate the literature most relevant to this study.

Figure 2.1: Relevant research Overview Source: Author's Conceptualization



This literature review has 3 sections. The first section presents the literature related to innovation, strategy and new product development. The second section explores literature related to the culture of innovation, particularly its leadership, structures, and organizational culture. The third section will identify the research questions for exploration in this qualitative study. As seen in Figure 2.1, there are 6 broader categories of research that are relevant to this work, though not in an exhaustive context. This literature has focused on the specific topics within each of these larger categories that relate to this work. The graphic above is an attempt to illustrate the broader categories and the specific topics that are applicable to this work.

Section 1: Innovation - Definitions, theories, and research

2.2 Defining innovation

The innovation literature is incredibly diverse, spanning a variety of areas from defining and measuring innovation to the development and marketing of innovations. Innovation research also examines barriers to innovating and methods of circumvention for marketplace success. For the intent of this thesis, I will concentrate on the definitions that include “radical innovation” and “disruptive innovation” given the context of the research in the high-tech industry and because transformative innovation as defined in this work is a contribution to the literature and not currently available.

The landscape of innovation across both populist and academic literature lacks any consensus on the definition of innovation. Nagy et al., (2015) suggest that the responsibility lies with researchers to accurately define what a disruptive innovation is and that without a specific definition, such a term may become merely a buzzword (p.2). Hopp et al., (2018), in their extant literature review of disruptive innovation, suggest that this field is at a “decisive point of its evolutionary trajectory” (p.446).

An early definition by Zaltman et al., (1973) defines innovation as “any idea, practice, or material artifact perceived to be new by the relevant unit of adoption” (p.10). A later definition by Baragheh, Rowley and Sambrook (2009) defines it as “a multi-stage process whereby organizations transform ideas into new/improved products,

service or process, in order to advance, compete and differentiate themselves successfully in the marketplace".

The newness of the product serves as a common factor for all definitions of innovation. Johannessen, Olaisen and Oslen, (1993) extend Zaltman et al.,'s (1973) definition by suggesting that definitions of innovation should include indicators of the processes involved. According to Johannessen, Olaisen and Oslen, (1993), innovation should be understood in conjunction with the successful implementation of new products, new production processes, and new services. The European Commission's Green Paper on Innovation (1995) defines innovation as the novelty in doing things better or differently to ensure successful production and exploitation of the product or service in the marketplace. The Green Paper further indicates that although innovation is often used synonymously with the utilization of new technologies, new technology itself is not a defining factor of innovation (1995). Keeley et al., (2013) suggest that the word innovation has essentially lost its meaning due to overuse of the term. Many definitions of innovation do not differentiate between the outcome and process of innovation. They suggest that innovation is not merely invention as innovation also involves understanding customer needs. The majority of literature actually focuses on the process of innovation as opposed to how innovation disrupts or upends markets. The latter is discussed and there is much literature on this topic, but significantly less when compared to the literature on innovation product development. A major contribution of this work is the focus on industries and innovations that transform markets and lives.

The nature of innovation itself is very risky and unpredictable in terms of which activities will prove successful, who will benefit, and when the benefits will occur (Zider, 1998). Haragadon and Sutton (2000) suggest that the success of innovations can be understood by examining the reasons why certain innovations fail in the marketplace. They suggest that innovation involves the constant generation of new ideas and testing those new ideas (Haragadon and Sutton, 2000). Zider (1998) suggests that a component of effective innovation is the openness to learn from failure (also see Drucker, 1998 and Hargadon and Sutton, 2000). The failure of an innovation can be useful as it can provide an opportunity to learn what will and will not work in the innovation process (Drucker, 1998). He further adds that the process

of innovation can be long and that the payoff may sometimes span across a period of time rather than being immediate (Drucker, 1998).

Christensen et al., (2016) suggests that the core concepts of the definition of “disruptive innovation” are still vague and provide a motivation for research and evaluation. In his seminal work, Christensen (1997) explores disruptive innovation, particularly how smaller companies are able to master the innovation process by continuous improvement to disrupt larger and more established companies. His definition and theory of disruptive innovation is quite influential in both academia and practice. He posits that many companies do not fail as a result of poor management, as suggested by other research. Many well-managed companies have failed in the past for the very reason that they were well-managed. Christensen attributes the failure of well-managed companies to the management practices used initially by these companies to become industry leaders in the first place. Christensen (1997) is interested in explaining why the launching of new-growth businesses is difficult. The core tenets of a well-managed company revolve around their ability to improve the performance of their products and the ability to meet customer needs. Activities related to performance improvement and meeting customer needs involve targeting larger markets, seeking higher margins, investing in technologies that matter to customers and receiving and implementing customer feedback. More recent research (Christensen, 2006; Christensen et al., 2015; Gans, 2016; Sood and Tellis, 2011) debates the previous definitions of both *innovation* and *disruptive innovation.* Reinhardt and Gurtner (2014) suggest that “disruptive” applies to the potential outcome of a specific innovation, not the actual outcome. Christensen et al., (2015) acknowledge that although their current definition and theory of disruptive innovation will not explain business success, continued research and integration with other perspectives will create a better understanding of what helps businesses innovate successfully. This study will attempt to add to this development and will serve as a key contribution to this work.

Nagy et al., (2015) also draw on the work of Christensen in their attempt to define and predict disruptive innovations. They suggest that without a consistent definition, drawing on both the ontology and epistemology concerning disruptive innovations, it is difficult to move forward (Bryman and Bell, 2011; Guba and Lincoln, 1994; Nagy et

al., 2015). The authors identify three innovation characteristics in the innovation literature that are central to this definition: *radical functionality, discontinuous technical standards* and an *innovation's ownership (p.3).* Their review of the literature suggests that both radical and discontinuous innovations have a dramatic impact on "organizational structure, strategy, context, and use" (p.3). The third factor, "ownership," is innate and suggests the influence of both external and internal organizational factors, including employee motivation and organizational performance. The ownership factor is a key part of this research study as it explores the internal organizational factors related to innovation.

Radical innovation involves the acquisition of new knowledge and the development of new products for new customers or emerging markets, while incremental innovation enhances the firm's existing knowledge and improves existing products (Benner and Tushman, 2003). Incremental innovation improves existing product-market domains by responding to the needs of existing customers and markets (Lin, McDonough, Lin, and Lin, 2013). Radical innovation commonly destroys existing market positions and broadens new market opportunities (Aboulnasr, Narasimhan, Blair, and Chandy, 2008). Pursuing radical innovation requires the development of unique features and benefits superior to those found in existing products and markets.

The structure of a well-managed company hinders its ability to foresee and implement any process that can fundamentally change or alter its structure (a theory supported in Miles and Snow's (1978) work on organizational structure). Incumbents often fail to recognize the threat posed by a disruptive innovation (Schmidt, and Druhel, 2008). Christensen (1997) identifies this threat/innovation as the resources, processes, and values (RPV) theory.

2.3 Resources, processes and values (RPV) theory

RPV theory postulates that the resources, the processes, and the value system utilized by the firm act as a precursor that determines the strengths, weaknesses, and abilities of the firm to deal with change (Christensen, 2004; Kirchmer, 2017). Resources can be conceptualized as assets the firm can develop, buy or sell (Christensen, Anthony, and Roth, 2004). Processes are defined as "the established patterns of work by which companies transform inputs or outputs - products or

services - of greater worth" (Christensen, Anthony, and Roth, 2004, xvii). Values determine how the resources are allocated within the firm. According to the RPV theory, firms are able to successfully address their opportunities when they have the means and resources to succeed. Christensen, Anthony, and Roth (2004) suggest that well-managed firms, when faced with disruptive innovations, are incapable of prioritizing the needs associated with such technologies because of their resources, processes, and values. The resources, management processes, and values of a successful firm that are used to maintain existing markets do not work well with low margin customers. These industry leaders struggle to develop disruptive technologies that have the ability to penetrate new markets (Christensen,1997, 2004). This work attempts to shed light on cirumstanceswhen this is not the case, i.e. industry leaders are focused on penetrating the new market and yet still fail. It is imperative that managers are able to recognize a disruptive innovation when they see one (Schmidt and Druhel, 2008).

2.4 Disruptive and sustaining technologies

Christensen (1997, 2004, 2015) distinguishes between sustaining technologies and disruptive technologies. Most companies that foster new technologies do so in the form of improved product performance. This is what Christensen (1997) defines as sustaining technologies. These technological advances are sustaining in nature. "What all sustaining technologies have in common is that they improve the performance of established products along dimensions of performance that mainstream customers in major markets have historically valued" (Christensen, 1997: xviii). In comparison to sustaining technologies, disruptive technologies initially result in reduced product performance. Disruptive technologies underperform established products (sustaining technologies) in existing markets (Schmidt and Druehl, 2008). Disruptive innovation theory provides insight on how new organizations can use low-cost, convenient innovations to create growth and eventually surpass the market performance of incumbents (Christensen, Anthony, and Roth, 2004). Disruptive technologies have the ability to change the value proposition in a market (Christensen, Anthony, and Roth, 2004). Such technologies "either create new markets or reshape existing markets" (Christensen, Anthony, and Roth, 2004). In other words, the disruptive technology may perform better on an

alternate dimension and therefore can open new markets, or lower the cost of the product or service (Schmidt and Druehl, 2008). The reason it becomes difficult for well-managed companies to adopt disruptive technologies is that it may initially offer low performance for mainstream (existing) customers (Christensen, 1997). In the case of this work, we are exploring scenarios in which this does not hold true, thus constituting a contribution to the literature. Although existing customers may fail to understand the value of the disruptive technology, new customers may be more receptive of the disruptive technology due to its potential value. Christensen (1997) illustrates this using the example of computer disk drives. Older disk drives have more data capacity than newer ones (e.g. USBs), with which existing customers are familiar. In this case, the disruptive technology (USBs) are smaller, convenient and easier to use. This disruptive technology opens new avenues and markets for pursuit. The developers of disruptive technologies almost always improve their initial product with continued investments and product assessment. Christensen (1997) suggests that eventually the product performance of the disruptive technology will become so efficient that it will take over the older markets. Disruptive technologies essentially maintain attributes of the older product and provide new dimensions to it (Markman and Waldron, 2014). Subsequent researchers have studied various industries and technologies (Ansari, Garud, and Kumaraswamy, 2016; Christensen, 1997; Christensen, 2006; Christensen and Tedlow, 2000; Gilbert, 2005; Gilbert, 2006; Kaplan, 2008; Tripsas and Gavetti, 2000) and have largely supported these findings.

2.5 Types of disruptive technologies

Christensen, Anthony, and Roth (2004) distinguish between two types of disruptive innovations, low-end and new market. Low-end disruptive innovations offer existing customers a relatively low priced, convenient product. Low-end disruptive innovations can manifest themselves when the existing products and services are over-valued and over-priced in relation to the value that existing customers can use (e.g. Walmart's discount retail store). New market disruptive innovations, on the other hand, occur when "characteristics of existing products limit the number of potential consumers or force consumption to take place in inconvenient, centralized settings" (Christensen, Anthony, and Roth, 2004, xvii). Examples of new-market innovations

include personal desktop computers, digital photography, unmanned aircraft (Anthony, Johnson, Sinfield, Altman, 2008; Christensen,1997). The research for this thesis is focused on new market disruptive innovations, specifically in the smartphone industry, which have the ability to transform the way individuals work, live and play (transformative innovations) as opposed to low-end disruptive innovations such as improved hard drives. This work contributes to innovation research and adds to Christensen's work by looking at situations in which established firms have not either missed the market or failed to develop technology and enter the market, but in fact pursue the market aggressively and still fail. This work tries to address this gap in the literature, a gap which Christensen himself acknowledges.

2.6 Disruptive technology principles

Christensen (1997) identifies several principles of disruptive technology. Firstly, many companies tend not to invest in products or services that are unaligned with investor and customer wants and needs. Well-managed companies tend to throw away ideas that either provide minimal profits or returns or do not adhere to customer expectations. Investing in disruptive technologies becomes a challenge as it is difficult to invest resources into lower margin opportunities that are not initially well received by customers. Secondly, successful companies have the need to maintain their share prices to ensure company growth. It becomes a difficult task for these companies to penetrate new, smaller markets (such as those markets for disruptive technologies), as they must focus on the larger markets to enable the maintenance of their share prices.

Managers in well-managed and successful companies tend to overcome the risks that disruptive technologies present. Even if the company is initially receptive to the disruptive technology, managers may use management practices tailored for existing markets to target the new markets meant for the disruptive technology offering. Christensen (1997) suggests that this thought process is entirely wrong and the utilization of such techniques guarantees the ultimate failure of well-managed and successful companies.

2.7 Value chain evolution theory

Christensen (1997) presents another theory of innovation that is related to the RPV theory; value chain evolution (VCE). VCE suggests that “companies ought to control any activity or combination of activities within the value chain to drive performance along dimensions that matter most to customers” (Christensen, Anthony, and Roth, 2004, xix). Companies can choose to integrate and execute activities themselves or can choose to rely on suppliers and partners for added value. Adding value in terms of relying on suppliers and partners is done by firms to focus and specialize on a narrow range of activities as opposed to carrying out the entire production and delivery process. Direct control and integration of activities allow firms to fully explore options available for pursuit and utilize experiments and tests to solve any problems with products or services. Christensen, Anthony, and Roth (2004) suggest that the integration of activities has its fair share of flaws, as integrated companies may react slowly to change (as they must make changes to the entire process) and are relatively inflexible. VCE suggests that to address this issue, companies should outsource activities that do not directly influence the characteristics that are fundamental to the main product or service that the customers deem important. Partners, suppliers, and specialists are better equipped to address the less essential activities, allowing firms to narrow their focus on activities that directly impact their customers. This ensures that the firm’s response to changes in the form of disruptive technologies and/or the entry of new markets can be done efficiently and effectively. What Christensen doesn’t address in this research is how established organizations that introduce a disruptive product and are focused on innovation still manage to fail. This component will be central to the research focus as every company identified within this research was focused on innovation and introduced a disruptive product. Current innovation theory does not address this specific phenomenon and focuses on organizations that are unable to respond to disruption or are incapable of focusing on disruptive products as a direct result of their organizational structure, management, and processes.

2.8 Innovation and organizational strategy

Organizational strategy is conceptualized as an essential environmental influence that facilitates the creation and sustenance of major innovations in the market. A well-conceived organizational strategy in amalgamation with other factors can potentially influence and predict overall market performance and the success of an innovation or product. The organizational strategy inducted by a firm can facilitate and give birth to an array of new ideas and solutions for innovation. In select cases, the strict adherence to a preordained organizational strategy can be detrimental. Many firms refuse to alter or adapt their strategy to the surrounding circumstances. This can significantly inhibit the options and avenues available for pursuit and/or can allow for a lag in response time to environmental pressures.

Organizational strategy is the outcome of decisions made that influence organizational performance. Wright, Kroll, and Parnell (2000) suggest that strategy refers to the way that results are achieved while Fischmann and Almeida (2009) define strategy as the direction of the firm in relation to the environmental context. Hambrick (1983) envisioned organizational strategy as a "pattern in a stream of decisions (past or intended) that guides the organization's ongoing alignment with its environment and shapes internal policies and procedures"(p.5). Lin et al., (2014) posit that the use of strategy is a way to ensure a sustainable competitive advantage by investing the resources needed to develop long-term capabilities and, if sustainable, can lead to long-term performance (1979). Namely, the organizational strategy is a carefully executed plan of action that characterizes and encompasses internal strengths and weaknesses, managerial values and environmental opportunities. Miles and Snow (1978) described strategy as an accumulation of decisions by which strategic business units aligned their managerial process with their environment (cited in Desarbo et al., 2005). These respective definitions of organizational strategy are similar, as both highlight the conscious decisions made by firms to facilitate and align their processes with the environment to ensure market potential is maximized. A preordained strategy often sets precedence for the types of decisions made by the firm for the future. A proven unsuccessful strategy may require redressing to accommodate for discrepancies and other environmental factors.

2.9 Post-market strategy

When unveiling the characteristics of organizational strategies, an assessment of Miles and Snow's (1978) work on product-market strategy applied at the firm/business level is warranted. Miles and Snow (1978) chaired some of the earliest discussions on organizational strategy and its relationship to market performance and developed what is now considered the most widely scrutinized strategy classification system (DeSarbo, Di Benedetto, Jedidi, and Song, 2006; Fiss, 2011).Particular attention was dedicated to explore how firms and businesses applied organizational strategy and its influence on market success. This typology was heavily discussed and validated by many subsequent studies that also examined organizational strategy and its relationship to new product success, innovation and competitive advantage (Doty, Glick, and Huber, 1993; Floyd and Woodridge, 1992; Huy, 2012; Kabanoff and Brown, 2008; Kunc and Morecroft, 2010). Miles and Snow (1978) measured the rate at which organizations respond to and/or change their products and markets in response to environmental pressures and demands. The adoption of an organizational structure precipitates the changes carried forth by firms and businesses to satiate market demand. Miles and Snow (1978) proposed a strategic typology that categorized business units into four groups: Prospectors, Analyzers, Defenders, and Reactors. Using this typology, Miles and Snow (1978) tested the prevalence of these four categories in four industries (textbook publishing, electronics, food processing, and healthcare). Each category possesses a distinct pattern of attributes that are then analyzed and applied to businesses within these industries. In addition to this, Miles and Snow (1978) studied the interrelationships between strategy and other internal and external factors such as technology, structure, managerial processes and power distribution - ultimately concluding that all of these factors influence how an organizational strategy is developed within the firm/business. Conversely, the organizational strategy adopted by a firm has the potential to be influenced by any changes to these factors.

2.10 Organizational strategy typology

Miles and Snow (1978) examined the interrelationships of various attributes - product, market, and technology - within each strategic type. They identified the

differences between these strategies based on patterns that distinguish each category's characteristics, i.e. resources and capabilities, and how these characteristics influence which market opportunities are pursued.Their work continues to be evident in subsequent research (Andrews, Boyne, Law, and Walker, 2009; Beynon, Andrews, and Boyne, 2010).

Prospectors are the pioneers and leaders of change in product market development; they attempt to locate, launch and exploit new market and product opportunities (Floyd and Woodridge, 1992; Slater, Olson and Hult, 2006; Song et al., 2007). Prospectors can be equated to innovators. Prospectors thrive on change; they frequently innovate and alter their product lines to accommodate new market opportunities (Pinto and Curto, 2007; Boyne and Walker, 2010; Slater, Hult, and Olson, 2010). Firms that are classified as Prospectors tend to engage in rapid technological change and intrinsically rely on technological innovation to propel their involvement in new market opportunities (Miles and Snow, 1978). Their R&D capabilities and market research capabilities are well structured and apply strength in order to penetrate new markets (Walker et al., 2003). R&D and market research capabilities are essential for identifying and exploring ideas that are worthy of pursuit. R&D and market research departments in Prospector businesses can differentiate between multiple ideas of equal magnitude to predict which products or innovations could yield maximum results. Strong R&D and market research abilities such as those found in Prospector groups are also beneficial in determining how to effectively allocate resources for product development. Since Prospectors actively seek new market opportunities, they usually employ a first-to-market-strategy and their strategic solutions usually include product development programs (Lin et al., 2014; Kearns, 2005; Moore, 2005; Boulianne, 2007).

In contrast, Defenders engage in minimal or no new product market development (Miles and Snow, 1978). Their innovative capabilities are weak and Defenders typically do not strategize around ideas of innovation. Defenders offer a limited range of products and purposely focus their attention on resource efficiency and process improvements (Conant et al., 1990; Pinto and Curto, 2007; Slater et al., 2010). Their aim is to maintain a secure niche by protecting previously developed domains. Rather than focusing on developing new products for the market, Defenders aim to

offer higher quality and competitively priced products or services in their respective industries (Hambrick, 1983, Lin et al., 2014).

Analyzers use a balanced approach to pursuing new market opportunities (Boulianne, 2007; Pinto and Curto, 2007; Slater et al., 2010). Firms that are Analyzers lie between Prospectors and Defenders in terms of the type of strategic capabilities they seek. They engage in fewer and slower product market changes in comparison to Prospectors but are less committed to stability and efficiency in comparison to Defenders. Analyzers may defend their positions in some industries but may choose to follow promising new products, innovations or markets that have been proven to be successful by Prospectors. In this sense, they often employ a second-to-market strategy. It may be posited that the “Analyzers” in a firm exist within the product development group of an innovative firm. This will be explored as a part of the research.

In comparison to the other three groups, Reactors lack a consistent strategy and usually respond to environmental and market pressures inappropriately which often leads to market failure. Long-term goals are not evident, decision patterns nonexistent. They respond inappropriately and lack control of both their internal mechanisms and external environment (Lin et al., 2014; Slater et al., 2006; Song et al., 2007). Simply put, they do not have a consistent strategy for innovation since they do not have the needed capabilities to support it (Laugen, Boer, and Acur, 2006; Lin et al., 2014).

Other studies (Andrews and Boyne 2010; James and Hatten, 1995, 1996; Fox-Wolfgramm et al., 1998; Chen (1999); Matsuno and Mentzer (2000); Morgan et al., (2000); Slater and Olsen, 2000; Desarbro et al., 2005) examined Miles’ and Snow's (1978) organizational strategy typology and its application to different industries, applying the typology to a variety of new industries which were not discussed by Miles and Snow. These studies also re-applied the typology to industries that were examined in the original study to ensure that the results were valid and applicable across all industries. This attests to the applicability of the typology to industries other than those originally examined by Miles and Snow (1978). What is particularly noteworthy about the preceding studies is the way they utilized the four strategies

and applied it to concepts such as market success, marketing strategy, environmental uncertainty, and firm performance. Firm performance and overall market success is a result of how the structure is defined and executed as well as the firm's response to the environment. Furthermore, these studies validate the importance and influence of organizational strategy in determining the success and performance of different types of businesses across industries. An exploration of these organizational strategies can help shed light on the issues that Christensen does not address, i.e. established firms that are focused on disruptive technology but ultimately fail. This is a focus for my research and I will therefore explore strategy at the organizational and departmental level.

2.11 Criticisms of the organizational strategy typology

Studies (Aragon-Shanchez and Sanchez, 2005; Desarbo et., al 2005; Pleshko et al., 2013) revisit Miles and Snow (1978) to uncover how strategic types, capabilities, environmental uncertainty, and firm performance are interrelated. The primary objective of these studies was to address some of the criticisms presented in previous work with regards to the overall applicability of the Miles and Snow typology across industries. Desarbo et al.,'s (2005) work particularly attended to the criticisms surrounding the notion of how environmental irregularities potentially influence the strategies chosen by businesses. This in return affects firm performance. Desarbo et al., (2005) provided insight into the relationships between capabilities, strategic type, and performance across a wide range of industries. In addressing the above, Desarbo et al., (2005) introduced a new quantitative methodology (NORMCLUS) to empirically derive strategic typologies using survey data obtained from 709 strategic business units (SBUs) across three countries (China, Japan, and the United States). Although some similarities between both methodologies were noted, Desarbo et al.,'s (2005) multi-objective, four mixed-type solutions dominated the Miles and Snow (1978) typology with regards to objective statistical criteria and its ability to explain the interrelations with variables such as strategic capabilities, environmental uncertainties, and performance. The four groups identified by Miles and Snow (1978) were highly context-specific and it was suggested that such strategies do not neatly fall into set categories as portrayed by Miles and Snow (1978). The authors projected that depending on contexts, different compositions of groups will emerge. For

example, "given a different set of industries, it is possible that five groups might be found, including two groups that are essentially Prospectors (but with different capabilities of facing different environments) and one each of Analyzers, Defenders and Reactors (Desabo et al., 2005, p.64). When faced with challenges, all Defenders, Analyzers, Prospectors, and Reactors may not respond in the same way and according to type. There are different degrees and variations to the responses elicited by the environment. It is important to note that Desarbo et al.,'s (2005) study does not negate the Miles and Snow framework, rather it provides an alternative or "second-order derivative" to the P-A-D-R typology. The notion that firms of similar strategies do not respond the same way adds to the complexity of innovation research and determining what factors contribute to long-term firm success. This work further contributes by illustrating how firms with the same strategy can have drastically different results, depending on other factors.

While criticisms are evident, the Miles and Snow typology has endured (Pleshko et al., 2013) and is found to be one of the more useful frameworks for categorizing companies' strategies (Desarbo et al., 2005; Fiss, 2011; Kabanoff and Brown, 2008; Valos and Bednall, 2010). For the purposes of this paper, I will use the Miles and Snow framework since this paper is context specific.

2.12 Blue ocean strategy

Kim and Mauborgne (2005) introduced Blue Ocean Strategy, based on the premise that the traditional business environment, grounded in the strategic and management approaches of the twentieth century, is disappearing. Their strategy is founded in the analysis of the "Red Ocean" or the normal routine behaviours of firms. Rather than compete directly on price, a "Blue Ocean" strategy would involve competing based ondifferentiation. Firms pursue unique market spaces in order to differentiate. It is this strategic movement, to seek and to find value innovation, that creates profit and success. Simply put, Blue Ocean strategy is "a theory of market creation that makes competition irrelevant" (Kim and Mauborgne, 2005). They highlight six principles that are essential to blue ocean creation. These include:

1. Reconstructing market frontiers to eliminate the competition.
2. Focusing on the big picture.

3. Reaching beyond existing demand and exploring noncustomers.
4. Adopting the right strategic sequence to ensure commercial validity.
5. Overcoming formal barriers through active employee engagement and taking risks to disrupt the status quo.
6. Developing trust and commitment across the organization (culture) to build execution into the chosen strategy.

Further research (Kim and Mauborgne, 2017) related to this strategy identifies three key components central to the dynamic process of market creation. These include:

1. **A Blue Ocean Perspective** to expand people's horizons and guide them in the right direction.
2. **Market-Creating Tools with Guidance** and how to apply these tools to build people's creative competence and open up a new value-cost frontier.
3. **Humanness in the Process** to inspire and build people's confidence so that they own and drive the process for effective execution (Kim and Mauborgne, 2017, p.23).

Perspectives and vision, tools, creativity and humanistic processes are complementary and critical components of a Blue Ocean strategy.

2.13 Departmental strategy

Although organizational strategy as a whole is deemed crucial for product development and marketplace success, the strategy can be examined on a smaller scale within departments. The value of departmental strategy to product performance and market success can be likened to that of organizational strategy and its influence on performance and success. Departmental strategies can be combined and manifest as an organizational strategy that can then be utilized by the firm. To reiterate, departmental strategies can be applied at the organizational level. The reverse can also be said: an organizational strategy can manifest itself as a variety of departmental strategies. Organizational strategies can be extrapolated, clustered and applied to departments. Both organizational strategy and departmental strategy are part of the same pyramid. The value of the Miles and Snow (1978) organizational

typology is unquestionable, yet it fails to examine other environmental complexities that are present at the department level which can potentially impact the ability to facilitate major innovations. In this context, the departmental strategy can be viewed as a derivative of organizational strategy and plays a key role in the formation and sustenance of a firm in its market. The departmental strategy is also implicit in the work of Kim and Mauborgne (2005, 2017) who note the importance of both overcoming formal barriers as well as executing across and within the organization to create value and success.

The studies mentioned thus far have largely focused on the applicability of organizational strategy to a variety of industries and how variables such as environment and product performance are conceptualized in accordance with the former. Cooper (1983, 1984) examined departmental strategy and its influence on dynamics such as departmental integration and organizational strategy. This research identifies how the departmental strategy elected by a firm acts as one of many determinants for the success of transformational innovation.

Departmental strategy is relevant as it ties back to organizational strategy and a focus or lack thereof on innovation. There is an acute focus on departmental strategy literature that directly ties to either organizations that have an innovative approach or departmental strategies that foster an innovative strategy. Accordingly, departmental strategy literature that fell outside of this acute focus was not reviewed in the context of this work.

2.14 New product development (NPD) strategy

Research demonstrates that front end NPD strategies have a significant impact on product success and firm performance (Chang et al., 2007; Cooper and Kleinschmidt, 1987; Cooper et al., 2002; Floren and Frishammar, 2012; Markham, 2013; Wincent and Floren, 2017). Cooper's (1984, 2003, 2011, 2013) work on distinguishing top performers, hypothesized that the new product strategy a department elects will determine the performance of the new product program. After conducting an in-depth analysis of new product strategies used by 122 industrial firms, he outlined 19 departmental strategy dimensions that were used by these firms. Cooper further analyzed these departmental strategy dimensions to produce 5

clusters of strategy types employed by various firms. These are the Technologically Driven Firm, The Balanced Strategy Firm, The Defensive and Focused Technologically Deficient Firm, The Low Budget, Conservative Strategy Firm, and The High-Budget Diverse Strategy Firm. Cooper clearly defined the interconnectedness between the strategies used by departments and firms (organizations), using the 19 departmental strategy dimensions to develop 5 strategies employed at the firm level. His findings indicate that firms that used a Balanced Strategy are the top performers, outperforming the other firm types based on all performance measures. Firms that used a Balanced Strategy had the highest success rate in developing products, meeting objectives and achieving success over competitors. Firms that employed a balanced strategy would foster an environment for innovation, as they avoided competitive markets, targeted high potential, growing markets and had technological sophistication. Similarities between the Balanced Strategy and Miles and Snow's (1978) analyzer typology and prospector typology can be noted, as the strategies share similar characteristics. Likewise, Kim and Mauborgne (2005) identify the need for a specific strategic sequence to ensure commercial validity.

The worst performing firms were The Defensive, Focused, Technologically Deficient Firms, and The High Budget, Diverse Strategy firms. The top performers spanned across various industries, suggesting that a balanced organizational strategy is universally applicable and suitable for all types of firms and industries. The implications of his study suggest that at the departmental level, there can be a plethora of strategies used but at the firm level the strategies are more concentrated and refined. Whether at the organizational level or departmental level, the decision-making process is greatly influenced by the environment and process related changes.

2.15 Departmental integration

The scope of departmental integration was limited to focus on new product development as this research is solely focused on environments that foster transformative product innovation, as stated in Chapter One. As such, departmental integration in terms of product development is the key area of concern when it comes

to exploring the topic of radical or transformative product innovation. Across-the-board, departmental integration was deemed as being influential for the development of a functional departmental strategy. Studies in new product development (NPD) recognize the importance of departmental integration, particularly where R&D is concerned (Barczak, Griffin, and Kahn, 2009; Brettel et al., 2011; Rubera et al., 2010; Song and Song, 2010)

As outlined above, organizational strategy and departmental strategy are integral environmental determinants that facilitate the better development of innovation and therefore increase an innovation's odds of success in the marketplace. Organizational strategy and departmental strategy can influence how a particular innovation is conceived, adopted and executed within the market. When examining the literature on performance, there is a notable divide in studies that measure department and firm performance. It is often the case that departmental strategy and organizational strategy are intertwined and studied with other variables such as product success and departmental integration. A noticeable pattern emerges in that the aforesaid variables influence one another, making it extremely challenging to extrapolate and examine any one of the factors on its own. Departmental strategy is vital for determining ways to improve departmental performance. Departmental integration allows for better departmental performance which increases the efficiency of the firm as a whole (Becker and Lillemark, 2006; van Hoek and Chapman, (2007); Zacharia and Mentzer, (2007); Troy et al., (2008); Carbonell and Escudero, 2010; Yannopoulos et al., 2012).

When the organization performs well, the chances of marketplace success are heightened. For example, Yannopoulos, Aug, and Mengec (2012) suggest that coupled with integration, a proactive versus reactive market stance was integral to the success of new products in high-tech firms. Product innovation is also highly related to departmental integration in the sense that two tasks are involved in pushing a product into the market. Thus, firms need to develop both technical and market competencies (Calantone and Rubera, 2012). Other studies suggest that NPD can be negatively impacted by managerial departmental structures and functions (Griffin and Hauser, 1996). Jugend et al., (2015) note that such structures are often common in marketing, engineering, and R&D since they often act in

isolation with little communication, collaboration or knowledge sharing across the organization. Physical proximity is also noted as essential to a greater degree of integration (Leenders and Wierenga, 2002; Eppinger and Chitkara, 2006). A greater degree of integration is promoted when NPD departments are co-located. From a managerial and leadership lens, other studies (Eldred and McGrath, 1997; Gumusluoglu and Ilsev, 2009; Kelley and Lee, 2010; Kim, Min, and Cha, 1999; Toledo et al., 2007; Floren et al., 2017) posit that leaders who exhibit both technical and managerial competencies may heighten integration. These factors - physical proximity, leadership, integration, cross-functional teams - will be explored in this research in relation to the success or failure of the organizations and NPD.

2.16 Metrics for success

The majority of studies explore departmental integration in the context of R&D and marketing only. Griffin and Hauser (1996) give a possible explanation as to why departmental integration may not have been discussed as prominently as some of the other topics. They describe integration as a natural process that occurs when firms grow and as entrepreneurs combine research and market knowledge to develop a solution for a particular problem or product. Research suggests that NPD integration is often characterized by organizational and departmental structures along with managerial functions, particularly related to R&D and marketing development (Griffin and Hauser, 1996; Jugend et al., 2014; Rubera et al., 2012). Therefore, the integration process may not have been well documented, as efforts to integrate were not performed consciously. There is an oft-stated analogy that may be helpful here. The blacksmith analogy alludes to the notion that a hundred years ago, departments or firms were comprised of an entity that had the ability to handle all aspects related to product development (production and sale). This single individual obtained and located materials and developed these materials into products which corresponded to customer needs. Product innovation was established in and of itself and if market feedback for a particular product was positive, this feedback would essentially be enough to ensure long-term survival.

In comparing over 75 measures used in new product development, Griffin and Page (1993) conclude that firms and academics use different success metrics to measure

product development and performance. Firms use four measures from two categories measuring individual product success. Academics on the other hand measure performance at the organizational level, that is, overall organizational performance. Firms are concerned with defining and measuring new product success or failure whereas academics are more concerned with the failure and success of businesses as a whole. Five independent dimensions of performance success and failure were identified: firm-level measures (% of sales of new products), program performance, product-level measures (development cost, launched on time, product performance level, met quality guidelines, speed to market), measures of financial performance (break-even time, attain margin goals, attain profitability goals, IRR/ROI) and customer measures (customer satisfaction, met revenue goals, revenue growth, met market share goals, met unit sales goals). Griffin and Page (1993) suggest that the differences between the sets of measures used by academics and firms are reflective of the ability to access data. It is easier for companies to collect data on measures such as customer acceptance and satisfaction related to a specific product, than it is for a person who isconducting research externally. In their research, both firms and academics uniformly agreed that measuring product development success and failure is multidimensional. Firms tend to use customer acceptance measures and internally focused financial metrics to measure the success and failure of products. For this thesis, I am defining successful companies as those companies that have been able to establish and maintain market dominance in the smartphone industry, as stated in my definition of success in Chapter One.

2.17 Successful product development and strategy

Undoubtedly, R&D and marketing integration are considered critical activities within New Product Development (NPD) (Gupta et al., 1986; Fain et al., 2011). Similar to the findings by Griffin and Page (1983), other research suggests that product innovation was a multidisciplinary process and that the integration between R&D and marketing departments are one of the most critical elements needed for a successful product development process (Bendoly et al., 2012; Ernst et al., 2010; Fain et al., 2011). Gupta et al., (1986) propose that a firm's strategy and how it perceives environmental uncertainty can influence the actual need for R&D and marketing

integration. Gupta et al., (1986) set out to answer the following questions: 1) How much integration is required? Do some firms require a greater degree of integration than others? What factors affect the degree of integration required between R&D and marketing? 2) How much integration is achieved? What factors affect the degree of integration between R&D and Marketing? 3) How does integration affect innovation success? According to their findings, the degree of R&D and marketing integration required and/or achieved can be measured in terms of how involved both departments are and the level of information sharing that is present in the innovation development process. Factors such as organizational design, senior management support, and socio-cultural differences (a concept further explored by Fain et al., 2011) between R&D and marketing managers have the ability to influence the level of integration achieved by an organization. R&D and marketing innovation could be achieved through senior management by 1) promoting the need for integration, 2) establishing joint reward systems, 3) balancing the long and short-term objectives of the company, 4) encouraging risk-taking and, 5) providing opportunities for R&D and marketing managers to know and understand each other (Gupta et al., 1986, p.14). New product development success is influenced by the ways in which levels of integration are perceived and executed by firms. In summary, Gupta et al., (1986) perceive strategy, organizational, environmental and individual factors of an innovation ecosystem to be influential on R&D and marketing integration, and in turn reflective of new product development success.

It is the intent of my research to explore these factors in relation to innovation to see if there are systematic differences across successful and unsuccessful firms that contribute to a successful innovation ecosystem, linking to the research on disruptive and radical innovation, new product development strategy, departmental strategy, and cross-departmental integration shared in this review.

Leenders and Wierenga (2002) also suggested that the integration of marketing and R&D can lead to improvements in new product development. Integration is defined as "the degree to which there is communication, collaboration, and a cooperative relationship between marketing and R&D" (Leenders and Wierenga 2012, p.306). Their aim was to test whether mechanisms such as physical proximity (housing both departments closer to each other), the use of information and communication

technology (ICT), cross-functional teams and job rotation that companies used to promote integration between both departments were effective. For example, Pfizer employed a cross-functional team between R&D and marketing to implement a new antibiotic medication, Trovan. The success of Trovan (winning approval for 14 different types of infections, as opposed to the one type of infection originally proposed for approval) was attributed to the marketing team who pressed for more clinical trials. Leenders and Wierenga (2002) were also interested in studying whether ICTs (email, intranet and conferencing) facilitated positive communication which made departmental integration easier and more effective. Using data collected from 148 pharmaceutical companies, Leenders and Wierenga (2002) measured and compared the effectiveness of seven different integration mechanisms. Their findings suggested that most integrating mechanisms positively influenced integration and the new product development process. A cross-functional review board is most strongly associated with the integration of departments in the pharmaceutical companies studied. Physical proximity (e.g. housing departments within the same building) between marketing and R&D was also related to a higher level of integration. Furthermore, incentives and rewards (equal remuneration and career opportunities) also influenced integration and new product performance but to a lesser level. ICT allowed for the transfer of information and new knowledge between departments.

Stewens and Moller (2017) recognize that NPD is central to a firm's competitive advantage yet suggest ambiguity about what success looks like. In their 2017 meta-analysis of the literature surrounding NPD, they create a comprehensive framework that defines NPD performance, identifying both internal and external factors related to the NPD process. For the purposes of my research, some of these key drivers for success are noted in Table 2.1, with particular emphasis on the internal drivers such as the management of NPD, incentives, knowledge generation and management, information-sharing, departmental integration, team characteristics and the management of teams.

Table 2.1: NPD performance factors - internal drivers for success

Cluster	Key Indicators	Key Research
Management of Process Characteristics	Process quality; process structure; agile NPD processes; NPD process design; standards in the NPD process; process modeling and analysis; process model to facilitate organizational learning; cognitive maps; the idea generation process; process completeness; performance tradeoffs in the NPD process; processes considering platform characteristics; product support in the NPD process; NPD process of radical innovation; process model to integrate technology acquisition; scheduling NPD; factor *time* within the NPD process; concurrency in the NPD process; parallel processes in inter-functional collaboration	*NPD process design*: Bajaj et al., (2004), Balbontin et al., (1999), Barclay (1992a), Barclay (1992b), Barclay et al., (1995), Calantone et al., (1995), Cáñez et al., (2007), Carbonara and Scozzi (2006), Chen and Ko (2010), de Visser et al., (2010), Edgett (1996), Fekri et al., (2009), Goffin (1998), Harmancioglu et al., (2007), Huang et al., (2002), Hughes and Chafin (1996), Lilien et al., (2002), MacCormack et al., (2012), Malhotra et al., (1996), McDonough and Barczak (1999), Reidenbach and Moak (1986), Rochford and Rudelius (1997), Sandvik et al., (2011), Simon and Tellier (2011), Song and Perry (1997), Spivey et al., (1997), Sun and Wing (2005), Varela and Benito (2005), Veryzer (1998)
Management of Inter-Firm Cooperation	Configuration of collaboration; collaborative competence; conflict management in collaboration; creating tie strengths in alliances/collaborations; open innovation; communication/coordination among NPD partners; organization of NPD in alliances; formalization of collaboration; managerial *guanxi* (interpersonal relationships); learning in inter-firm teams	*Open innovation*: Grönlund et al., (2010), Pullen et al., (2012) *Antecedents and outcomes of collaboration*: Ateş et al., (2015), Badir et al., (2008), Badir et al., (2009), Bstieler and Hemmert (2010), Chen and Lin (2011),

		Colombo et al., (2015), Cui et al., (2013), Eng and Wong (2006), Fang et al., (2015), Gerwin and Ferris (2004), Jassawalla and Sashittal (1998), Lam and Chin (2005), Lambe et al., (2009), Mishra and Shah (2009), Mu (2014), Oke and Idiagbon-Oke (2010), Parker and Brey (2015), Pujari (2006), Schleimer and Shulman (2011), Thomas (2013), Tomes et al., (1996), Yan and Dooley (2014), Yu et al., (2014), Zolghadri et al., (2011b)
Knowledge Generation and Management	Continuous improvement in the NPD process; organizational learning from NPD projects; the development of technological competencies; knowledge and information management; knowledge generation in NPD process; knowledge exchange in NPD process; information processing in NPD process; team learning in NPD process; absorptive capacity in supplier involvement; learning from competitors; knowledge transfer in collaborations; knowledge networks in NPD teams; knowledge management at the team level; information-sharing of project managers; information dependencies in stage-gate processes	*The importance of intangible assets*: Hultink et al., (2011), Ignatius et al., (2012), Jespersen (2012), Lewis (2001), Ramesh and Tiwana (1999), Taylor and Lowe (1997), Zahay et al., (2004) *Knowledge generation:* Acur et al., (2010), Adams et al., (1998), Ahn et al., (2006), Akbar and Tzokas (2013), Akgün et al., (2005), Akgün et al., (2006), Akgün et al., (2007b), Bartezzaghi et al., (1997), Caffyn (1997), Caffyn and Grantham (2003), Chen et al., (2012), Chiang and Shih (2011), Chu et al., (2011), Hsu and Fang (2009), Li et al., (2010), Liu et al., (2005), Murray and Chao (2005), Ruy and Alliprandini (2008),

		Schulze and Hoegl (2006), Thwaites (1992) *Knowledge transfer*: Bradfield and Gao (2007), Corallo et al., (2012), Frank and Ribeiro (2014), Jepsen (2013), Lawson and Potter (2012), Newey and Verreynne (2011), Schoenherr et al., (2014), Tavani et al., (2013), Wang and Li-Ying (2014)
Structural Steering Mechanisms	Performance measurement; project monitoring and evaluation; performance assessment; evaluation of NPD team members; project review practices; incentive systems; supporting tools; forecasting success/failure from market data; assessment of NPD procedures; controlling mechanisms in NPD; target costing; control vs. creativity; project plan and control; IT tools in NPD; procedures to launch new NPD process; multi-project management; risk management at firm level; risk management at the program level	*Designing steering tools*: Afonso et al., (2008), Baker and Bourne (2014), Balaji et al., (2011), Büyüközkan et al., (2007), Chen et al., (2006), Cooper and Kleinschmidt (1995), de Maio et al., (1994), Durmuşoğlu and Barczak (2011), Jou et al., (2010), González and Palacios (2002), LaBahn et al., (1996), Mu et al., (2009), Oehmen et al., (2014), Ozer (2003), Peng et al., (2014), Rogers et al., (2005), Tidd and Bodley (2002), Varma et al., (2007), Watkins (1984), Yeh et al., (2010) *Individual incentives:* Faure (2009), Mihm (2010), Natter et al., (2001), Sicotte et al., (2004)
Management of Teams and Team Characteristics	Team characteristics; characteristics of team leaders; characteristics of team members; satisfaction in team	*NPD team configuration:* Akgün and Lynn (2002), Fan et al., (2009), Genç and di Benedetto (2015),

	cooperation; risk perceptions in teams; stress management in NPD teams; team autonomy; collocation vs. dispersion; trust among team members; transformational leadership in NPD teams; managers' trust in NPD teams; team composition in inter-functional teams; team cognitive styles; collective efficacy in NPD teams; team reflectivity; flexible working hours in teams; team improvisation; team stability; we-ness in teams; team leader empowerment in alliances	Keller (2001), Sivasubramaniam et al., (2012), Tsai et al., (2014) *Trust and familiarity in NPD teams:* Dayan (2010), Dayan et al., (2009), Haon et al., (2009), Markham and Lee (2014) *Individual characteristics:* Aronson et al., (2006), Aronson et al., (2008), de Visser et al., (2014), Liu et al., (2015), McDonough (1993), Mu et al., (2011), Park et al., (2009), Reilly et al., (2002), Sarin and McDermott (2003), Strang (2011), Sun et al., (2014)
Management of Inter-Functional Cooperation	Managerial *guanxi* (interpersonal relationships); complementary effects of information systems in inter-functional cooperation; inter-functional cooperation; psychological drivers of cooperation; the role of design in the NPD process; IT's roles in global R&D collaboration; trust in inter-functional collaboration; interaction between inter-functional teams	*R&D-marketing integration:* Bendoly et al., (2012), Cordón-Pozo et al., (2006), Ernst et al., (2010), Fain et al., (2011), Gemser and Leenders (2011), Hise et al., (1990), Kyriazis et al., (2012), Massey and Kyriazis (2007), Moenaert and Souder (1990), Olson et al., (2001), Perks et al., (2009), Sherman et al., (2005), Song et al., (1996), Souder (1988)

Adapted from: Müller-Stewens and Moller (2017)

2.18 Degrees of integration

The majority of studies thus far have examined departmental integration uni-dimensionally, in other words, departmental integration is an antecedent of new product development (NPD) success. However, there are differences in opinion regarding whether a consistent level of integration is needed throughout the product development process to ensure success or whether varying levels of integration are needed instead. Some studies (Hanson 2009) suggest that more integration is better, whereas others suggest that the level of integration needed is contextual. Kahn (1996) proposed that low degrees of integration between departments involve an interaction perspective, i.e. simply sharing updates on projects during scheduled times. Integration at a higher level involves collaboration through strategizing and mutually achieving select goals. Higher integration can lead to shorter development processes, cost reduction, strengthening of organizational goals, and improved quality of products which will eventually lead to new product success in the market. Rubera et al., (2012) comparatively assess these two perspectives by taking into consideration the fact that departmental integration between R&D and marketing is vital to combine critical knowledge (technological and market). Other research recognizes that it is crucial for firms to effectively integrate different departments, creating new capabilities from current resources that meet customer demands and add market value (Brettel, Heinemann, Engelen, and Neubauer, 2011; Eng and Ozdemir, 2014; Olson, Walker, Ruekert, and Bonner, 2001; Song, Montoya-Weiss, and Schmidt, 1997; Troy, Hirunyawipada, and Paswan, 2008 ; Zhao, Feng and Shi, 2018).

Using data obtained from 11 NPD projects by five firms, Rubera et al., (2012) investigate how R&D and marketing integration affect performance to a varying degree across four types of NPD processes: pure exploitation, pure exploration, technological competence exploitation and market competence exploitation, depending on the type of competence that needs to be developed during the NPD process. Rubera et al.,'s (2012) analysis suggests two conclusions: 1) the effect of integration is dependent upon the type of competence used by firms in the new product development process, and 2) performance must be assessed on two

dimensions - process (time to market and meeting the planned budget) and market (sales and market share).

The effect of integration has variable results depending on whether process performance or market performance is being assessed. They found that in certain cases, the effect of integration on the types of performance produces different results. Ideally, the optimal level of integration should be determined at the project level, even before the project commences. The results of this study indicated that benefits of integrating R&D and Marketing are highly contextual (based on the type of performance and the type of project at hand) as opposed to universal. Rubera et al., (2012) also contributed to the literature on the role of marketing in the development of disruptive technologies. According to Christensen (1997), when businesses listen too carefully to their customers, firms fail to develop disruptive technologies. This is due to the inability of the customers and the mass market to appreciate the value of a disruptive technology in its initial development. Rubera et al., (2012) suggest that in the process of R&D and marketing integration, both departments must work together to understand the value of new technology and have the ability to communicate this to new customers. It is evident in this literature that a healthy amount of integration is required for success. Innovative companies are aware of the market and customer needs but still develop based on their vision. This contradictory idea is one of the many reasons why understanding innovation is so complex. In this case, integration leads to product success but certain customer inputs that drive product development must be ignored in order to create transformative innovations.

2.19 Competitive advantage

For the sustenance of long-term innovation (product) success, it is critical for enterprises to find ways to engage in competitive advantage. In a highly competitive market, firms/businesses often replicate or create similar products for the consumer. Consumers are given many options to choose from. To perform well and capture the targeted audiences, businesses spend significant time ensuring that they have an edge in the marketplace over their rivals. The only way to ensure that the firm’s competitive advantage (whether product or firm) will not be temporary, and that it can be sustained even as new products come to market or even as environmental

pressures penetrate the market, is constant innovation. "To obtain a competitive advantage, a firm must have competencies that allow it to create a higher perceived value than its competitors or to produce the same or similar products at a lower cost or do both simultaneously (Rothaermel, 2008, p.208).

Competitive advantage is relative to the type of measures being used. An important question is whether the competitive advantage is seen through seeking financial advantage (financial measures) or customer advantage (customer measures). Usually, competitive advantage is achieved through both. Ultimately, the catalyst driving the study of competitive advantage is the need to increase market share and the need for firms to grow.

The majority of studies that examine competitive advantage tend to focus on how various actions or inactions within an organization can lead to an increase in market share. Competitive advantage is most often discussed in relation to organizational strategy and success. The literature on competitive advantage addresses organizational strategy in an effort to set the context and minimize other variables that may have an effect on the results. By choosing an appropriate organizational strategy, firms are able to make decisions that will eventually lead to a competitive advantage. For example, if a prospector business wants to develop a competitive advantage, most of their process would revolve around the creation of new products. Conversely, Defenders would try to improve their existing products, through which they could create their competitive advantage. Grant (1991) examined the links between organizational strategy and competitive advantage in order to understand the relationship between all of the variables and to assess whether competitive advantage could be sustained over time. His study suggested that a firm's capabilities, strategies (organizational) and resources are key in determining competitive advantage.

Other studies have implied that tighter integration between departments will lead to an increase in competitive advantage. Rhee and Mehra (2006) examine how departmental integration leads to an increase in firm performance. This study examined performance as it relates to the financial gain of a firm or its increase in market share, which are both indicators of competitive advantage.

2.20 Competitive strategy

Competitive strategy is a vast area of literature that spans a variety of industries and variables. This work has taken a sliver of competitive strategy research within the context of innovative technology firms. As this work is focused on how technology firms foster transformative product innovation, the focus of the competitive strategy literature surveyed was on work that directly ties to innovation and culture, or strategy that facilitated an innovative strategy.

Competitive advantage has long been studied with its foundations dating back to Michael Porter's work in the late 1970s and 1980s. According to Porter (1998) "Competition is at the core of the success or failure of firms. Competition determines the appropriateness of a firm's activities that can contribute to its performance, such as innovations, a cohesive culture or good implementations" (p.1). Competitive strategy relates a company to its environment (social, economic) and the industry that it competes in. Competitive Strategy alludes to the way a company positions itself and competes in the marketplace. Competition is rooted in the economic structure of an industry, not just in the behavior of existing and current competitors. Competition is based on five competitive forces including: entry, the threat of substitution, bargaining power of buyers, bargaining power of suppliers and rivalry among competitors. Too often in the literature, competition is seen primarily in the form of rivalry between competitors as opposed to the other factors. Porter's (1980) work on competitive strategy is also well regarded and validated in the domain of organizational research. Essentially, the premise for Porter's work suggests that an industry's structure plays a very important role in determining the competitive strategies available to an organization within an industry. Porter suggested that there are three potentially successful competitive strategies that are present across industries. These strategies are Overall Cost Leadership, Differentiation, and Focus or Market Segmentation. The latter are more narrow in scope whilst overall cost leadership and differentiation are much broader. Cost leadership strategy emphasizes firm efficiency, as it produces relatively low-cost products that are made available to a wide customer base. Overall cost leadership requires the construction of efficient-scale facilities, cost reductions from experience, tight and cost overhead control, avoidance of marginal customer accounts, cost minimization in areas such

as R&D services, sales force and advertising (Porter, 1980). By employing this strategy, firms look to reduce costs. Keeping costs in check in relation to competitors is key to this strategy and if implemented correctly will yield the firm above-average returns in the industry regardless of any competitive forces that are present. Overall cost leadership also requires a high market share and/or other advantages such as favorable access to raw materials. Firms that use differentiation strategy tend to create unique products. In order to produce new products, companies engage in R&D and possess strong research and marketing skills. Approaches to differentiation strategy include design or brand image uniqueness, technological distinction, product features, customer service, and dealer network. Firms may encompass several of these dimensions or choose to explore and develop one. Differentiation provides insulation against company rivalry because brand loyalty is created. Like its name suggests, the focus strategy involves firms/businesses focusing on a particular buyer group, a segment of the product line, or geographic market when seeking a competitive advantage. Firms/ businesses that employ this strategy tend to focus its services to a narrow audience and strategically target these audiences more efficiently and effectively than those who compete broadly.

2.21 Utilization of resources

The way a firm utilizes its resources is considered an important factor in determining whether competitive advantage could be achieved by an organization (Andersén 2011; Cegarra-Navarro et al., 2011; Chilton and Bloodgood, 2010; Lin et al., 2010, Wang and Chang, 2005). Andersén (2011) notes earlier works (Acedo et al., 2006; Barney 1991; Barney and Hesterly, 2008; Peteraf, 1993) that explored the relationship between the firm's resources and performance as well as linking it to the dynamic capability approach.

Barney's (1991) early works examined a firm's resources and its link to sustained competitive advantage. Firm resources such as value, rareness, imitability, and substitution-ability were considered essential to sustain a competitive advantage. To obtain a competitive advantage, firms must implement strategies that "exploit their internal strengths, through responding to environmental opportunities, while neutralizing external threats and avoiding internal weaknesses" (Barney, 1991, p.99).

Porter (1998) also discussed how competitive advantage has multiple facets and can be related to the utilization of a firm's resources (e.g. cutting-edge technologies) and/or a firm's internal processes (Coff 1999). Bharadwaj et al., (1993) also indicated in their research that in addition to the firm's internal processes and utilization of firm resources, corporate culture may also be indicative of competitive advantage. Lin et al., (2010) also identify innovative capacity, efficient operating processes, and human capital as central to both advantage and performance.

Other studies (Segev, 1989; Kumar, 1998) compared the Porter strategy to the Miles and Snow typology. Differentiators are comparable to Prospectors as they execute a diverse product-market strategy. Cost leadership strategy can be compared to Defenders, as they do not venture into new markets and focus on improving their existing products at a low cost. Numerous studies including Szilagyi and Schweiger (1984) and Govindarajan (1986) have examined both the Miles and Snow (1978) typology in comparison to Porter's typology. In examining organizational strategy in the retail industry, Hawes and Crittenden (1984) compared Porter's (1980) 13 dimensions of competitive strategy that pertain to retail and analyzed whether there was any overlap in the results by comparing it with the Miles and Snow (1978) typology. White (1986) concluded that Porter's typology does not directly correspond with the Miles and Snow (1978) typology, and that rather than suggest that both typologies are mutually exclusive, they should be considered as separate entities that are part of a similar conceptual construct. A study by Segev (1989) was conducted to comparatively analyze both the Miles and Snow (1978) organizational adaptation strategy and Porter's (1980) typology on competitive strategy. The purpose of the study was to identify specific areas in which differences between both typologies exist and more specifically find common areas in which both typologies can be synthesized. Both typologies are similar in the sense that they attempt to classify and understand an organization's orientation towards product-market development. In total, 31 strategic variables were evaluated by judges on a seven-point maximum-minimum scale for each strategy in Miles and Snow (1978) and Porter (1980). The combination of both typologies resulted in the synthesis of two dimensions (internal consistency of the strategy and level of proactiveness).

2.22 Success

Competitive advantage is closely related to success as both have been applied to a variety of contexts. A firm can be considered to be competitive in that it constantly produces new products in response to market needs. However, this proposition does not necessarily relate to an increased profit or market success. A vast amount of literature has been dedicated to defining and measuring the concept of success. Ray et al., (2004) suggest that although a firm achieves a competitive advantage, it does not always result in superior performance. When evaluating the effect of departmental integration on firm performance, it becomes imperative to define success. As noted in Chapter One, I define success for my own research as sustainable market dominance which can be reduced to both financial and customer measures. Customer measures include customer satisfaction, market share, and volume. Financial measures include margins, enterprise value, and ROI. Karakaya and Kobu (1994) categorized previous studies on new product success and failures and placed them into five groups: 1) studies that focus on causes of new product successes/failures, 2) studies examining new product development processes, 3) studies investigating new product development strategy and performance relationships, 4) studies focusing on building models to predict new product performance, and 5) studies focusing on a single factor relating to new production success/failure.

In a series of studies, Cooper (1983, 1984a) defined success as a firm's product strategy and its influence on performance. Success was dependent upon how well marketing and R&D departments were integrated into Monaert et al.,'s (1994) study of 40 Belgian technology firms. The ability to foster a positive inter-functional climate and the formalization of products are instrumental for innovation success. It can be seen that different researchers use a variety of measures to define success (i.e. performance measures, market measures, etc.).

In the early 1990s, the Product Development Management Association (PDMA) developed a task force that reviewed the ways in which success was commonly measured (Griffin and Page, 1993). Five categories of success measures were identified by the PDMA: customer measures (market share customer satisfaction),

financial measures (profit goals, margins), process measures (technical performance and success, subjective success, completion within budget, on-time delivery), firm-level measures (success/failure rate, % of sales from new products), and program measures (new product program achieved its objectives). Success was defined across two or three categories using three to four measures. There was a difference in opinion between academics and firms in the ways to measure success. According to a large majority of academics, success was commonly defined in terms of firm-level measures and process measures in addition to revenue and profit goals and time-to-market success measures (Griffin and Hauser, 1996). In contrast, firms utilized customer measures (market share, volume, customer satisfaction) and financial measures (margins) to measure and define success.

Cooper and Kleinschmidt (1991) conducted a macro level analysis for uncovering the success factors in the new product development (NPD) process. According to Cooper and Kleinscmidt (1991), new product performance success is dependent on multiple factors. These factors include activities within the new product development process itself, the organization of the new product development program, the firm's organizational strategy, the firm's innovation culture and the senior management's overall commitment to the process. Ten performance measures were used to evaluate the new product programs of 135 companies: success rates, the percentage of sales, profitability relative to spending, sales and profit impact, meeting sales objectives, profitability relative to competitors, technical success rating and overall success. These 10 performance metrics were further reduced to two dimensions: program profitability and program impact. It was determined that a high-quality new product development process, a clear and well communicated new product strategy, adequate resources for new products, senior management commitment to new products and accountability, a positive climate for product innovation, strategic focus, high-quality development teams, and cross-functional teams were critical for the success of new product development programs.

The research examined thus far has largely focused on firms within a particular domestic environment and have not compared firms at the global level. Brentani et al., (2010) extended research on firm-level product development and examined global new product development and its relationship to performance and success.

More specifically, the authors examined whether the behavioral environment of the firm and strategies chosen by the firm impact success of new product development programs at the global level. Global NPD programs are assessed on the basis of the following dimensions: 1) organizational resources or behavioral environment of the firm relevant for international NPD (e.g. global innovation culture), 2) global NPD strategies that are chosen for expanding opportunities in the international market, and 3) long term and short-term outcome measures for program performance. Using data collected from 432 corporate global new product programs, they confirmed their initial hypothesis. It was found that strategic choices made by senior management that support the global NPD efforts are key in determining the firm's behavioral environment. Global presence and global product harmonization were also found to be mediating factors in the firm's behavior environment.

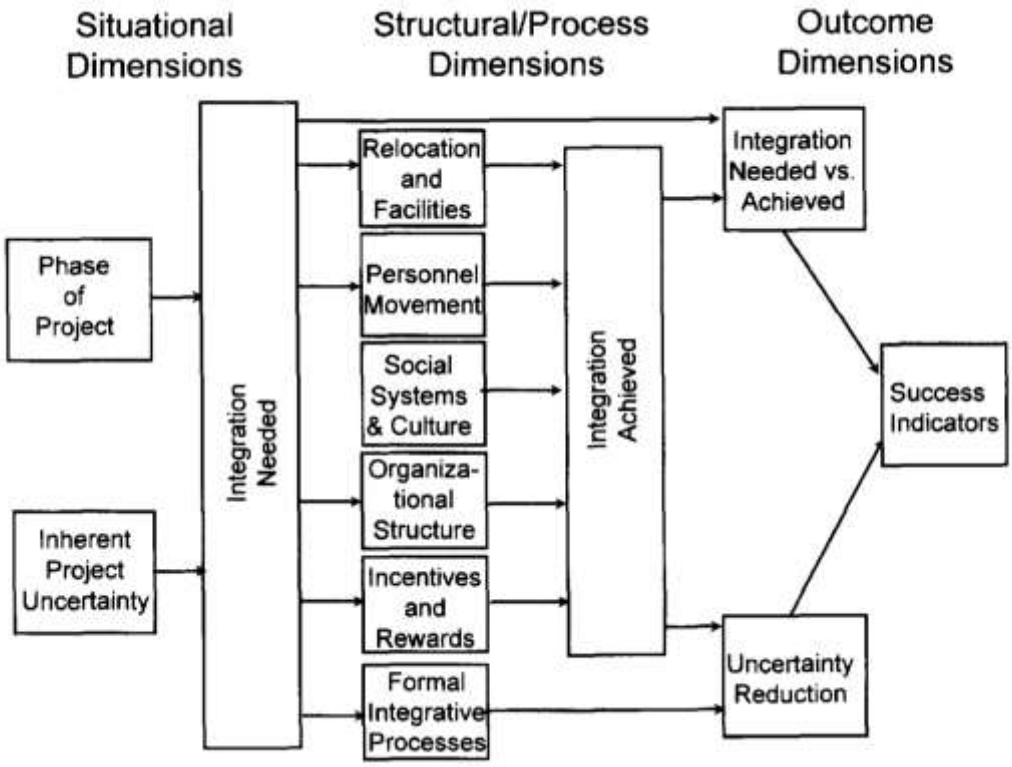
Again, It is evident that there are a variety of success definitions, depending on the research focus and ultimate goal of the work. In the literature referenced in my research, it is evident that there is a general focus towards defining success in terms of market performance and subsequently financial measures, aligning with the definition chosen for this work. As noted in this research, particularly related to innovation and product development literature (Griffin and Hauser, 1996; Aggarwal, Bigelow and Singh, 2011; Kim et al., 2011; Tang and Liou, 2010), success can be defined in a multitude of ways but can ultimately be distilled into two categories: financial measures (break-even time, attain margin goals, attain profitability goals, IRR/ROI) and customer measures (customer satisfaction, met revenue goals, revenue growth, met market share goals, met unit sales goals). These definitions align and support my definition. Success, as I define it, is sustainable market ownership, i.e. where an organization captures a significant percentage of the market and maintains it or grows its market share.

Section 2: The Culture of Innovation

The first section of this chapter defines the theories and key research related to firm performance and innovation from an organizational structure and integration perspective. Abbie and Hauser (1996) provide a comprehensive model of these firm characteristics as shown in Figure 2.2. These firm characteristics include the

organizational structure, social systems and culture, movement of personnel, formal integrative processes for teams, and incentives and rewards, clearly linking the relationship between these characteristics and organizational success.

Figure 2.2: Firm characteristics for success



Source: Abbie and Hauser (1996)

While Section One of this chapter focuses on the formal integrative processes and organizational structures, the second section explores further dimensions, namely the social systems, culture and incentives associated with successful firm performance.

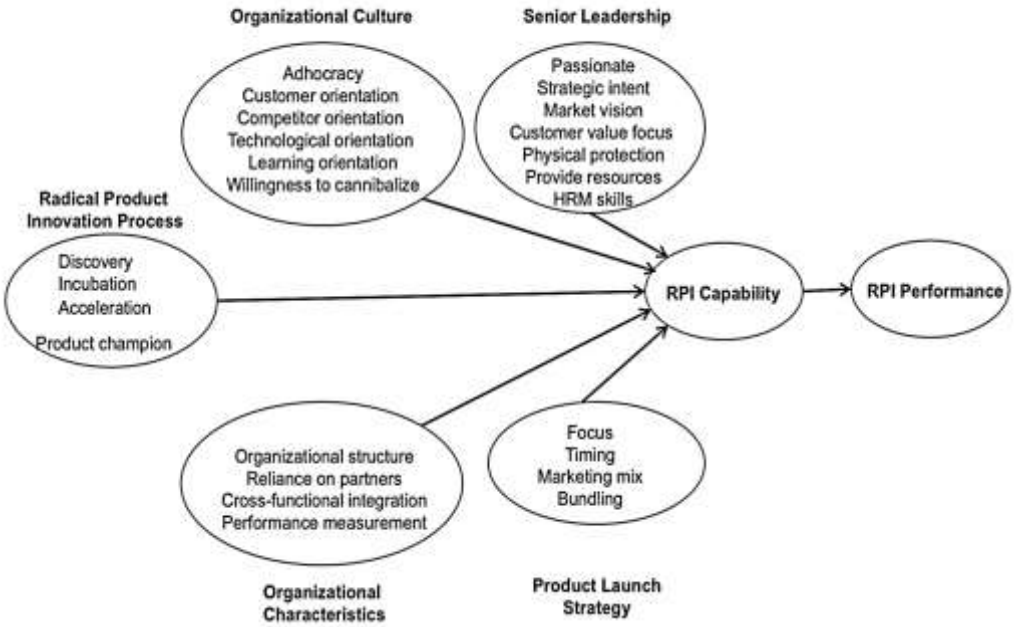
Along with the 10 factors identified by Abbie and Hauser (1996) and Cooper and Kleinschmidt (1991), subsequent meta-analytic research by Vincent, Bharadwaj, and Challagalla (2004) identified the following factors that are associated with a firm's ability to innovate and suggest both the positive and negative impacts of each:

- Environment/Context: competition (+), turbulence (+), unionization (–), and urbanization (+).

- Structure: clan culture (+), complexity (+), formalization (+), inter-functional coordination (+), and specialization (+).
- Demographic: age (+), management education (+), professionalism (+), and size (+).
- Method factors: use of dichotomous measures of innovation (–), use of cross-sectional data (+), studied process versus product innovation.

For the purposes of this research, the focus will be on the environment and structure, particularly in relation to the integration of marketing and research/product development. The choice to focus on environment and structure is driven by the fact that although all of the firms studied were focused on this market, all had the resources needed to be successful, and all were known for being innovative, some were able to maintain success whereas others ultimately failed. Therefore, it is hypothesized that there must be differences within the organization's environment or structure that leads to such differing outcomes. Hauser, Tellis, and Griffin (2004) suggest that further exploration is required into the cultural drivers for innovation, namely the role of the firm's internal culture as a driving influence including factors such as, "a willingness to cannibalize, visionary leadership, future market orientation and customer orientation"(p.15). Slater, Mohr, and Sengupta (2014) further support and define similar factors related to radical product innovation (RPI) capability, including the impact of organizational culture and senior leadership, shown in Figure 2.3, which identifies the key components, or factors, needed for innovation to occur:

Figure 2.3: Factors related to Radical Product Innovation Capability



Source: Slater, Mohr, and Sengupta (2014)

Popa et al., (2017) note that along with firm demographics and employee characteristics, the organizational culture has a significant impact on the adoption of innovative practices (p.135). McLaughlin et al., (2008) argue that culture has an impact since “established companies often lose the propensity to be innovative, as some of the cultural enablers of previous incremental changes become the current cultural inhibitors of radical innovation” (p.300).

Wind and Rhodes (2017) suggest that radical, transformative innovation requires challenging the “mental model” or “mindsets” of the firm as they are obstacles to change and innovation. They posit that past success creates a complacent culture in established organizations which lack a sense of urgency needed to pursue RPI, focusing “excessively on what has always worked” (Davila and Epstein, 2015). To overcome complacency, they identify key levers for organizational change, including:

1. Creating a feeling of openness, freedom, and collaboration via the organizational culture.
2. Incentives that include both recognition and rewards and are linked to stretch objectives.
3. Alignment of the organizational architecture, i.e. the creative configuration of strategy, structure, work, people and culture.
4. Adaptive experimentation as a philosophy, giving people permission for bold actions and recognize that it is okay to fail.

Wind and Rhodes (2017) note that, along with these factors, successful innovation companies, including Google and Apple, exhibited these common elements to managing innovation, as previously noted in other research (Abbie and Hauser,1996; Cooper and Kleinscmidt, 1991; Vincent, Bharadwaj and Challagalla, 2004).

Table 2.2: Characteristics of innovative companies

Open Innovation Through Internal and External Information Sharing	Embrace external knowledge flows to supplement the internal capabilities.
Incentives	Incentives motivate participants to engage. Along with bonuses, recognition based incentives and intrinsic rewards, including developing new solutions and working on interdisciplinary teams, are integral to growth. All incentives and performance measures must be linked to the key objectives of the firm.
Provide Security for Failure	Send the message that it's "okay to fail', encourage experimentation and calculated risk-taking.
New Capabilities and Leadership Model	Challenge the mental models of the current organization, avoiding egoism and the need for total control. Leaders adopt a win-win mentality and orchestrate change by drawing on the talent and ideas within the firm.
Organizational Architecture	The strategy, structure, work, people and culture must align for innovation. The greater the congruence between these elements, the more effective the innovation.
Create an Innovative Culture	Build and foster talent, including interdisciplinary backgrounds and the ability to collaborate. Hire the right people who share similar values and establish a culture of creativity. Support talent development through team engagement and learning opportunities via intensive training, interdisciplinary teams, and foster external relationships for growth.
Management of Innovation Horizons	Manage innovation by balancing short-term and long-term objections including current projects, existing projects (what other firms do) and exploration into new markets. This will determine the allocation of resources.

(Adapted from Wind and Rhodes, 2017)

2.23 Radical innovation cultures

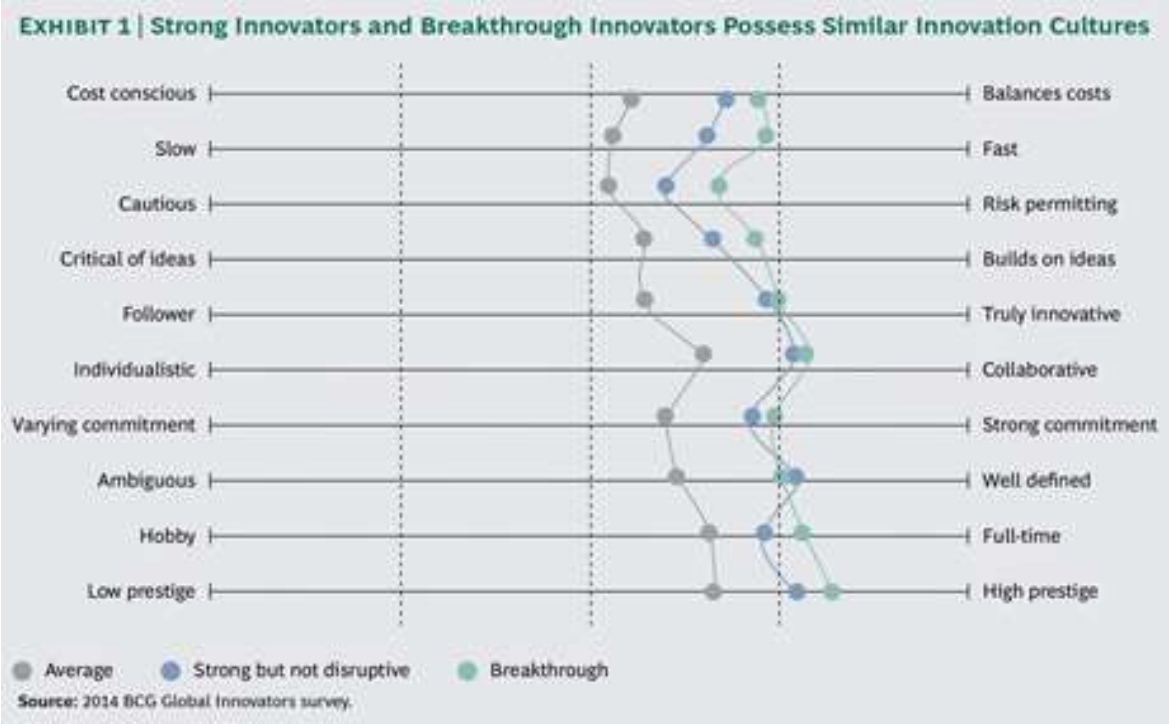
In the 2014-2018 rankings by the Boston Consulting Group of the 50 most innovative companies internationally, in which Apple and Google consistently rank 1st and 2nd respectively, many of these characteristics are also identified related to capabilities needed to accelerate innovation. As noted in the Boston Consulting Group's report *The Most Innovative Companies in 2018* (Ringel et al., 2018), it suggests that central to these organizations are design principles related to both strategy and leadership that include:

- Data focus - data from multiple sources (internal and external) is used at all stages of the innovation process.
- Risk-taking - willing to make bets on ideas that have a high-risk, high reward profile.
- Investing, acquiring and building talent - technical, business and cross-disciplinary.
- Mindset - adopting a transformational mindset that is agile and experimental.
- Cross-functional - an open-source, integrated approach across the entire organization.
- Flat structures that support cross-functional teaming and communication while ensuring that teams are empowered and accountable.
- Lean, simple and standardized with a focus on operational excellence.

The high value of innovation is clearly defined and reflected in the corporate cultures, with clear processes and structures to move new ideas forward. As leaders, strong innovators are focused and strategic, drawing on the talent of individuals in different business units to engage in cross-collaboration and creation. Ideas are rewarded, often intrinsically as employees associated with organizational success. They accept tension and both manage and embrace risk and failure, knowing that high risks may result in high rewards and that risk-averse cultures are obstacles to innovation and product development. They are not afraid to fail and willing to both blur and push

boundaries, recognizing that innovation can't be achieved in traditional, hierarchical ways. Change is a constant and these leaders/teams work in a constant and fast feedback cycle, transforming innovation from the inside out, using integrated teams versus highly specialized functions. It is this speed and agility for both product development and delivery that is a defining feature of the culture of innovation. The Boston Consulting Group Global Innovation Survey (2014, 2015) notes that fast innovators are more likely to be strong and more disruptive, getting new products to market quickly and generating more sales then the slower ones. Figure 2.4 outlines these differences between average, strong and breakthrough innovation cultures. As evidenced in Figure 2.4, strong and breakthrough innovators have similar cultures, particularly related to the level of collaboration and commitment. The differences are evident in factors such as risk-taking and speed.

Figure 2.4: Characteristics of innovation cultures



2014 Boston Consulting Group Global Innovators Survey

2.23.1 Innovation and environment/context

Dougherty and Hardy (1993) examined problems in large and mature organizations with sustained product innovation. They indicated that organizations with stable

operations have difficulties innovating so they must fundamentally change how they organize. Most stable firms are not organized to facilitate innovation. Even if innovation occurred, it was in spite of the system, not because of it. They further claim that innovation suffers if new products are not connected with organizational resources, processes, and strategy. Three areas of innovation-to-organization connection - Resources, Collaborative Structures and Processes, and Strategic Value and Meaning - are highlighted. It is stated that innovators must be able to connect and systems must be reconfigured. The proportion of problems solved (for all 3 areas of connection at both within-project and project-to-organization levels) indicates more effective innovation. Dougherty and Hardy (1993) found that successful innovators also solved a higher proportion of problems compared to unsuccessful ones and none of the innovation teams readily showed project-to-organization problems. Innovation efforts were mostly one-time events, happening in-spite of systems, not because of them. Resources were not deliberately provided and anti-innovation configuration of resources and processes within the firms made sustained innovation very unlikely. However, the study did not consider all organizational-level problems.

In their meta-analytic study, Rubera and Kirca (2012) test a comprehensive framework using the chain-of-effects model that suggests that innovativeness indirectly affects firm value, via its effects on both market and financial positions. Their quantitative study extended to investigate the moderating effects of firm, industry and country level factors on the impact of innovativeness on company performance. Aligned with this research, the authors investigate the moderating role of the ‘innovativeness culture/innovation orientation” (p.134). They define this term as “the firm’s ability to constantly introduce new products” and “the extent to which a firm has developed specific abilities that make it more productive in the use of resources necessary to innovate” (p.135). Their meta-analysis suggests, from an investor perspective, that firms with an innovative culture are capable of creating superior competencies. They suggest future research which investigates the mediating role of the internal factors such as formalization, cross-functional integration and employee pride in the relationships relating firm innovativeness and success. They posit that

current innovation literature explores the external factors and consequences of innovativeness, and thus should " adopt a broader, multi-level perspective" (p.145).

Likewise, in their meta-analysis, Slater, Mohr, and Sengupta (2014) identify the impact of organizational culture, environment and context on the RPI capability and performance. This aligns with previous studies that support the role of culture, context and communication in the innovation process, primarily through the lens of structural and cognitive perspectives (Eggers and Kaplan, 2013; Gavetti et al., 2012; Ocasio, 2011). Hareli and Rafael (2008) link successful innovation processes to personal relevance.

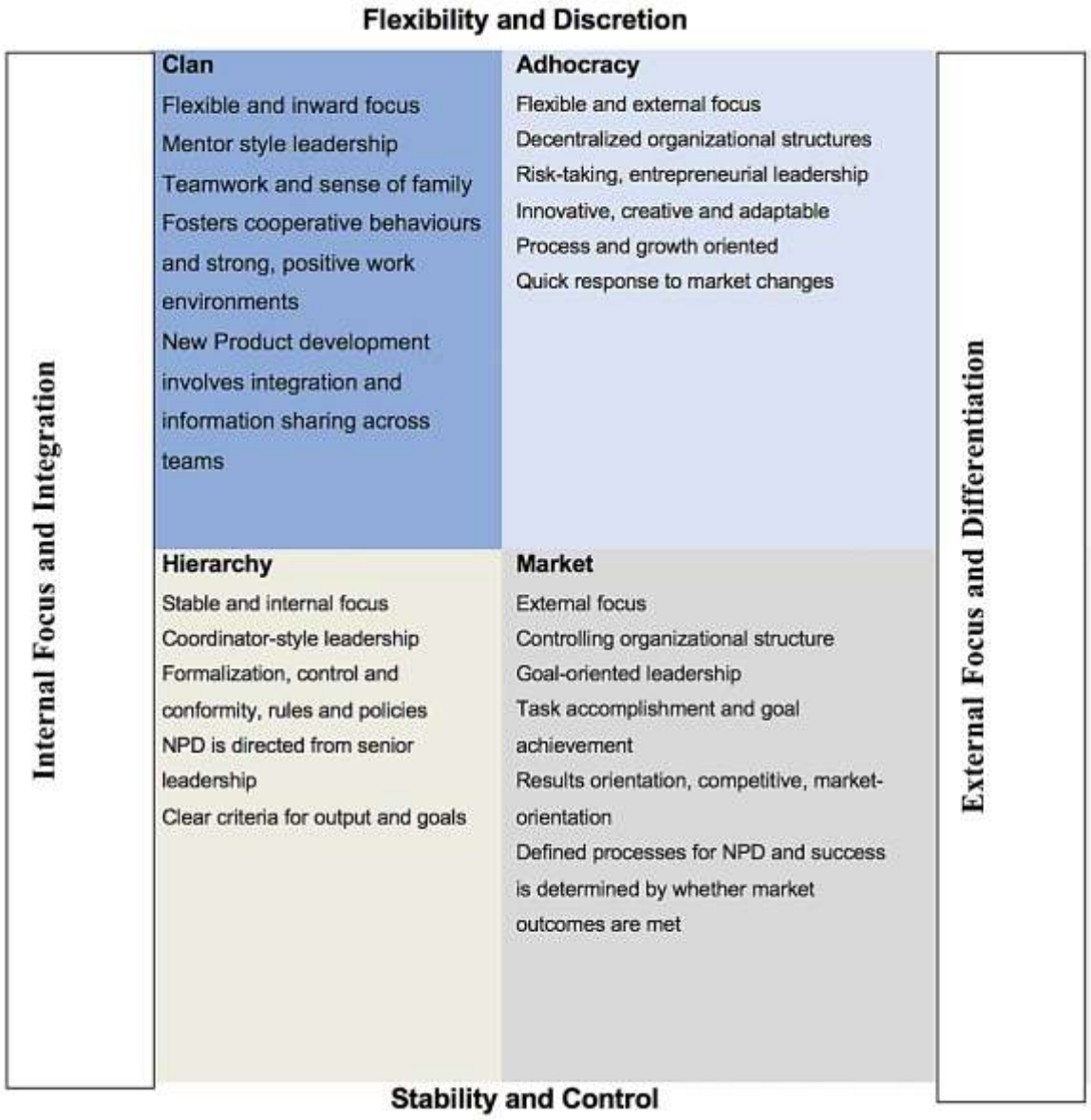
Eisend, Evanschitzky, and Gililand (2015) also explore the influence of organizational factors on new product performance in their meta-analysis, particularly the interplay between the organizational and national culture in their study. While national culture is not considered in this thesis, their work provides robust estimates of the influence of organizational culture on new product performance. The authors employed the "competing values framework" (Desphandé et al., 1993; Quinn and Rohrbaugh, 1983) to relate to different types of organizational structure.

2.23.2 Competing values framework

Schein (1996) defines organizational culture as "the set of shared, taken-for-granted implicit assumptions that a group holds and that determines how it perceives, thinks about and reacts to its various environments" (Schein 1996, p.236). Using this definition, Cameron et al., (2006) and Quinn and Rohrbaugh (1983) developed the "competing values framework" to organize and describe organizational culture along two dimensions, namely, *structure* and *focus*. This framework identifies the multiple tasks and outcomes that compete with one another within an organization. It suggests that organizations have multiple tasks and outcomes, many of which compete with one another (e.g., the need to have both an internal employee focus and an external customer focus). The *structure* dimension recognizes if an organization emphasizes flexibility or stability/control. The *focus* dimension identifies if the organization concentrates inwards (employees) or outwards (customers, the external environment). Based on these dimensions, a distinction is made between four types of organizational cultures: clan, adhocracy, hierarchy, and market (e.g.,

Desphandé and Farley 2004, Desphandé et al., 1993; Hartnell et al., 2011). Figure 2.5 outlines the key factors of each of these organizational cultures, as defined by the Competing Values Framework (Cameron and Quinn, 2006).

Figure 2.5: Competing values framework



(Adapted from Cameron and Quinn, 2006)

In their 2004 analysis, Desphandé and Farley suggest the following order of the impact of organizational cultures, relative to firm performance:

Market > Adhocracy> Clan> Hierarchy

This finding suggests that market and adhocracies are driven by an external focus on outcomes, achievement, and entrepreneurialism, allowing such organizational cultures to address the needs of their external environment and customers. Relative to new product performance, either technological or financial, it is suggested that a market culture type leads to the strongest results (Slater et al., 2014). Due to a strong market orientation, either in existing or unexplored markets, externally-focused firms identify customer needs rapidly because of a strong marketplace orientation (Cooper, 1984). Productivity and efficiency are outcomes aligned with clear planning inputs, driving the effectiveness of new product development plans. Other researchers also recognize this effect, i.e. the relationship between market orientation and new product performance (Evanschitzky et al.,. 2012; Henard and Szymanski, 2001). Thus, a hierarchy culture type, which focuses inward and values stability, control, and rules, instead of flexibility and creativity, is less successful in contributing to new product success.

2.24 Innovation and organizational culture

The central question of this research is to explore the organizational culture as an antecedent to innovation and RPI capability, aligning with the work of other researchers (Harison and Koski, 2010; Huizingh, 2011). Deshpande and Webster (1989, p.4) defines culture as “the pattern of shared values and beliefs that help members of an organization understand why things happen and thus teach them the behavioural norms in the organization.” An innovation climate and culture is central to innovation performance. Organizational climate refers to common practices, shared beliefs, and value systems that an organization follows (Janz et al., 1997). When teams encounter uncertainty and conflict during their work, a shared belief system of communicating ideas openly and informally affects how aggressively teams participate in the collaboration and innovation process. (Hoegl, et al., 2003). Alternatively, during periods of tension within the industry and organization, an organizational climate that does not reflect a shared value system and consistency at all levels will result in reduced interaction between employees in different departments. Hence, the failure to establish open communication lines can further deteriorate the innovation process (Chen and Huang, 2007). Dobni (2008) notes that the basic elements of culture (shared values and beliefs, and expected behavior

resulting from the values and beliefs) influence innovation in two ways - through socialization (Chatman and Jehn, 1994; Louis, 1980; Rich Harris, 1998) and through basic values, assumptions and beliefs (Tesluk et al., 1997). It is these elements that become the guide for behaviors. A "culture of innovation" would, thus, engage in and support behaviors that "value creativity, risk-taking, freedom, teamwork, be value seeking and solutions-oriented, communicative, instill trust and respect, and be quick on the uptake in making decisions (Dobni, 2008). Lock and Kirkpatrick (1995) suggest that these would be considered behavioural norms that are, ideally, embedded in the organizational fabric. Likewise, Jassawalla and Sashittal (2003) posit that these organizational norms, or "culture of innovation" would reject actions, thinking, and behaviors that inhibit innovation, including rigidity, control, predictability, and stability.

Similarly, Menzel et al., (2007) and Martin-de Castro et al., (2013) define 'innovation cultures' as organizational climates that foster the innovative capacity of employees, creativity, risk propensity, and personal growth. Like Vuori and Huy's (2016) study of Nokia, this research identifies the social climate for innovation that encourages flexibility, teamwork, cooperation and knowledge exchange (Collins and Smith, 2006; Martin-de Castro et al., 2013; Menzel et al., 2007). Popa et al., (2017) extrapolate this definition at the firm level relative to commitment-based HR practices, suggesting the importance of knowledge sharing and interdepartmental collaboration in the key functional areas since it not only develops trust and cooperation but also increases opportunities for informal social relations, deep understanding, and refinement of existing knowledge.

Dobni (2008) measures the innovation culture, in financial organizations, using a construct and exploratory factor analysis. He defines culture as "the deeply seated (and often subconscious) values and beliefs shared by employees at all levels, and it is manifested in the characteristics of the organization" (p.539). He cites Schein (1984) who suggests that culture "epitomizes the expressive character of employees and it is communicated and reinforced through symbolism, feelings, relationships, language, behaviors, physical settings, artifacts, and the like" (p.544). Dobni (2008) posits that culture is supported by both the organization's processes and strategic architecture (Dobni, 2006; Dobni and Luffman, 2003), and visible through the

expressive practices of employees (Coffey et al., 1994). To create a focus on innovation requires a change in the general cultural orientation of the organization, the propensity of management and the response of employees to explore new challenges and possibilities.

In their inductive study on innovation and culture, Vuori and Huy (2016) explored the impact of changes in the competitive environment and its impact on members. Their research of Nokia's downfall explored the cycle of behaviors and emotions of managers during the smartphone innovation process. The findings suggest the impact of both internal and external threats/fears on communication and interdepartmental integration of both short and long-term innovation development. Likewise, Lamaanen (2016) explores the success and failure of Nokia, through a qualitative study. The author uncovered that success was associated with organization and failure was associated with the environment. The discourse of Nokia was centered on strategic leadership, organizational capabilities, and organizational designs.

Radical innovation depends upon collaborative learning, idea generation and idea realization practices of stakeholders in an organization. Trust between teams and team members that they will deliver and will be accountable for their tasks ultimately leads to a higher degree of collaboration. The teams and team members are more likely to discover new ways of thinking and create greater outcomes. Trust encourages confidence and critical thinking among team members and leaders can utilize their newly freed-up time for more strategic tasks (Dovey, 2009; Senguin, 2010). Creating a culture of trust where risks can be taken without a culture of blame and perceived failure is valuable.

Prakash and Gupta (2008) propose that this interdepartmental connectedness and trust are critical to innovation culture and climate, noting the core factors of open communication, decentralization and high job autonomy in fostering innovativeness. Cakar and Erturk (2010), in their study of SMEs in the manufacturing sector, note the positive effect of employee empowerment on innovation capability, including their role in decision-making processes. They conclude that centralized decision making hinders openness, internal commitment and, ultimately, an organizational culture for

innovation. Martin-de Castro et al., (2013) identifies the impact of a strong internal innovation culture and management systems in deciding strategies for the advantageous use of technological assets, particularly through the use of patents and intellectual property rights. Popa et al., (2017) suggests that a strong, positive innovation culture enables firms to “explore, internalize and exploit outside knowledge to improve their innovation capabilities” (p.136).

2.25 Research questions

The aim of this research is to examine the key factors for a culture of innovation that impacts the organization’s ability to create transformative innovations and remain successful. Specifically, this research will be explored through the lens of the players in these organizations - the employees who work in these companies are the talent behind these innovations. This research aims to create a better understanding of the structures, processes, values, strategies, and leadership of these organizations to see if there are patterns or themes that are common through the perceptions of current and former employees.

Drawing on the literature reviewed for this study, a set of organizational factors related to radical product innovation capability have been identified for further exploration. These include:

1. The organizational culture;
2. The learning orientation and attitude toward failure;
3. The organizational structure, including cross-departmental integration, movement between teams, communication structures, goal setting, incentives and rewards; and,
4. Senior Leadership.

Slater et al., (2014) posit that these components of radical innovation have been explored in isolation in previous research and propose research that explores the inter-relationships of these factors. The authors reference the work of Denning (2010) who developed a set of principles for radical management, noting that a piecemeal approach to adoption will be futile. Drawing on both the work of Denning (2010) and Day (2011), they suggest that future research should be conducted to advance the

current knowledge on the intricate interplay of the factors identified, with particular emphasis on those that may be more important in the development of RPI capability. Figure 2.6 outlines the Slater et al., (2014) conceptual model that identifies the organizational components (culture, leadership, and structural characteristics) which must interplay in order to create Radical Product Innovation capability.

Figure 2.6: Interrelationships between Components of RPIC

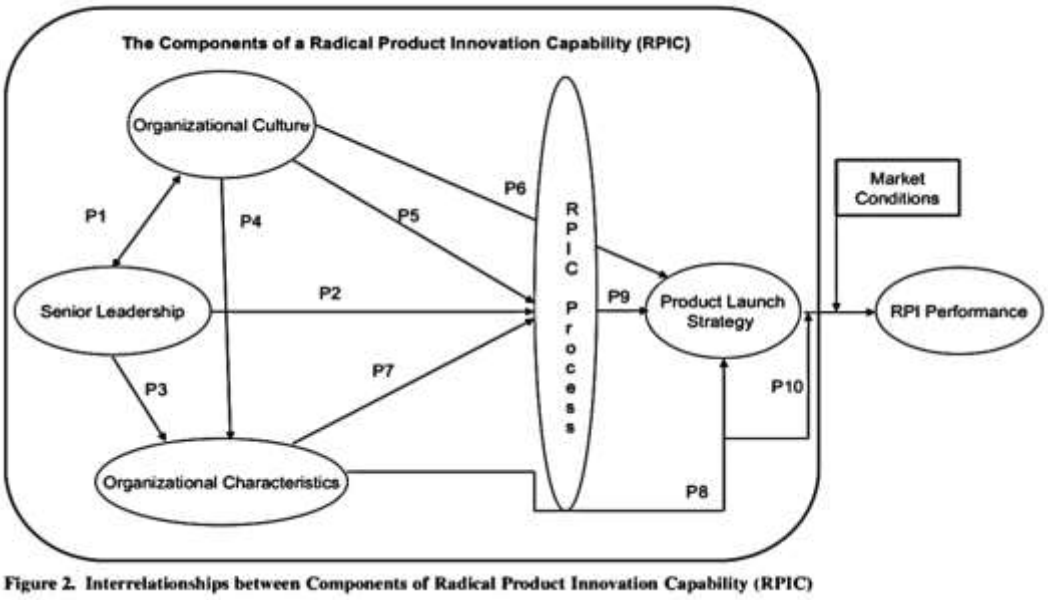


Figure 2. Interrelationships between Components of Radical Product Innovation Capability (RPIC)

Source: Slater et al., 2014

This exploration of the components, or factors of RPI capability, will be the impetus for this study. Likewise, I will link these components to the earlier discussion in this literature review that identified the gap in disruption innovation theory - i.e. what causes established, market-aware firms to fail - to identify if there are causal linkages. Aligned with these propositions of Slater et al., (2014), the following section provides an overview of the literature explored, the identified gaps and questions to investigate, as well as a conceptual model for this study, which identifies the key questions and themes that are the foundation of this work.

2.26 Chapter summary

Table 2.2 captures the key literature explored in this chapter that provides the impetus for this research. Also noted are the key questions that emerge, or identified gaps in the research that will also be investigated in this study.

Table 2.3 Key Literature/Themes reviewed

Key Literature	Subtheme	Key Authors	Key Questions to Explore
Innovation	▪ Definitions ▪ RPV Theory ▪ Disruptive and Sustaining Technologies ▪ Value Chain Evolution Theory	Zaltman et al., 1973; Olaisen and Oslen, 1993; Keeley et al., 2013; Hargadon and Sutton, 2000; Christensen, 1997; Christensen, Anthony, and Roth, 2004; Schmidt and Druhel, 2008	How does this research apply to established firms? What differentiates these firms? Can we address the gap in Christensen's research since it does not apply to established firms?
Organizational Strategy	▪ Post-market strategy ▪ Product- Market Strategy ▪ Organizational Strategy Typology ▪ Blue Ocean Strategy	Miles and Snow, 1978; Fishmann and Almeida, 2009; Hambrick, 1983; Griffin and Page, 1996; Desarbo et al., 2005; Kim and Mauborgne, 2005, 2017	Using the Miles and Snow typology, can we identify differences between established firms? What organizational strategies are evident in these companies?
Departmental Strategy	▪ Departmental Integration	Miles and Snow, 1978; Cooper, 1983, 1984; Kim and Mauborgne, 2017	Departmental integration allows for better departmental performance which increases the efficiency of the firm as a whole. Is this evident for the employees? Are there systematic differences between the established firms

			that lead to their success or failure?
New Product Development	▪ Integration ▪ Research and Development (R&D) and marketing integration ▪ Influence of incentives and rewards ▪ Degrees of integration	Gupta et al., 1986; Griffin and Page, 1983; Leenders and Wierenga, 2002, 2012; Fain et al., 2011; Rubera et al., 2012	Are there systematic differences across successful and unsuccessful firms that contribute to a successful innovation ecosystem?
Competitive Advantage and Strategy	▪ Definition, ▪ Utilization of resources ▪ New Product Development/learning and risk taking	Cooper and Kleinschmidt, 1991; Grant, 1991; Griffin and Hauser, 1996; Rothaermel, 2008; Rhee and Mehra, 2006; Porter, 1980, 1998; Brentani et al., 2010	Strategic choices made by senior management that support NPD efforts is key in determining the firm's behavioral environment. Does leadership have an impact? Program Profitability and Program Impact Metrics for Success
Culture of Innovation	▪ Internal Culture and Climate/ attitudes towards failure ▪ Organizational Culture ▪ Senior Leadership ▪ Organizational Structures (Performance Measurement,	Daugherty and Hardy, 1993; Abbie and Hauser, 1996; Cooper and Kleinschmidt, 1991, Vincent, Bharadwaj and Challagalla, 2004; Hauser, Tellis and Griffin, 2004; McLaughlin et al., 2008; Prakash and Gupta, 2008; Slater, Mohr and Sengupta, 2014; Popa et al., 2017; Wind and Rhodes, 2017; Davila	Slater et al., (2014) posit that these components of radical innovation have been explored in isolation in previous research and propose research that explores the inter-relationships of these factors

	Integration, Structure) ▪ Competing Values Framework	and Epstein, 2015; Vuori and Hoy, 2016	

For this research, I will draw on these identified gaps and opportunities for research to investigate the components of senior leadership, organizational culture, learning and attitudes towards failure, and the organizational structure relative to NPD and continuous transformative innovation.

The intent of this qualitative study is to explore cultures of innovation within different organizations and identify systematic differences between what characterizes the cultures of successful and innovative firms from those that are not. For example, why did Blackberry fail to sustain a leading position? Why do Apple and Google continue to be identified as the most innovative companies? What makes Google different from Palm, Blackberry or Apple? As suggested by Slater et al., (2014) the recognition of these key factors in successful organizations that demonstrate consistent innovation and RPI will contribute to existing theory and provide insight for investors, start-ups and venture capitalists. In this context, this will make a significant contribution to both theory and practice.

To carry out this research, semi-structured interviews were undertaken to develop a deep understanding of the culture of innovation across several companies in the smartphone industry. From a methodological stance, little qualitative research is evident in this field, particularly in the research on innovation management within the smartphone industry. Given this unique research focus, it is essential to develop critical questions that will delve into this work appropriately and gather the data required. The following main research questions were developed:

1. What are the key factors that define the culture of innovation of companies in the smartphone industry that contribute to transformative innovation?
2. Using these identified factors, does a comparison of successful versus unsuccessful companies yield distinctive factors that impact their success?

Within these main questions, a number of sub-questions are generated:

Is the innovation process clearly defined within the organization?

a. Is there a process for idea generation?

b. Is there encouragement and structures for risk and failure?

c. Are incentives and rewards evident?

d. Does the organizational culture and structure promote or impede innovation?

What is the impact of the organizational structure and culture on innovation?

a. Who engages in leadership and decision-making?

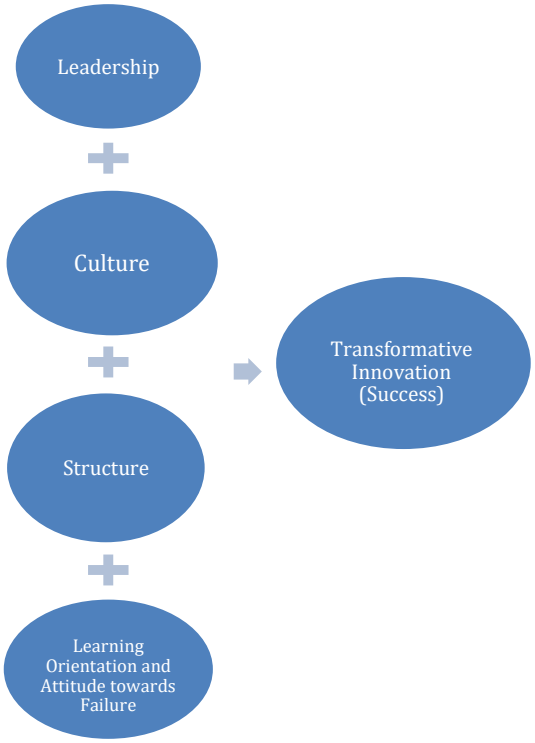
b. Is collaboration and integration evident and supported?

c. Are vision, strategy, and goals clearly defined?

d. How does leadership impact innovation?

It is expected that by generating data related to these key research questions, I will gain unique insights into the phenomenon of the culture of innovation in organizations in the smartphone industry, in relation to factors related to their success. Figure 2.7 is a conceptual model that captures the central idea of this research.

Figure 2.7: Conceptual model for this research



This figure demonstrates the relationship between an organization's leadership, culture, structure learning orientation and attitude towards failure relative to its success. Success is defined by the organization's ability to continuously create transformational innovations or, as stated in the model, RPI performance. It is hypothesized that the interplay of the elements of these four components create success. My research will explore each of these factors in depth to capture the differences, or similarities, of each element in relation to the success of the firm. Unlike the majority of the research explored in this literature review, I adopt a qualitative lens to investigate these themes through the voices of both current and former employees of these firms, constituting a contribution to the literature. It is through their perspectives and lived experiences that I position my work and subsequent findings.

In summary, the literature review has highlighted that exploring the relationships between leadership, organizational culture and structure along with a firm's learning orientation and attitudes towards failure is an important pursuit. This study will explore each as well as the interplay of these components relative to the success of the firm from the unique perspective of the employees engaged in the innovation process.

The next chapter, Research Methodology, outlines the research philosophy and design of this research study. Also explained are the methodology and the data collection process.

Chapter 3: Research Design and Methodology

3.1 Introduction

Chapter 3 presents an overview of the research design for this study, its theoretical context, and the methodological choices, explaining the purpose of this study and identifying the research paradigm adopted. I also present the methods for participant selection and data collection.

Section 3.2 outlines the key research questions and my philosophical stance which provides the foundation for the methodologies adopted in this research.

Section 3.3 outlines the research design, methodological choices, and research strategy. This section outlines the conceptual research model, research questions, how the research questions will be operationalized and a discussion of key terms, strengths, and limitations.

Section 3.4 provides a discussion of the sampling and data collection approach.

3.2 Research questions

The research questions for this study are defined as:

1. What are the key factors that define the culture of innovation of companies in the smartphone platform industry that contribute to their capability for transformative innovation?
2. Does a comparison of successful smartphone platform companies with unsuccessful ones yield distinct characteristics within the organizational culture of successful companies?

Lincoln and Guba (1985) characterize a research problem as “a state of affairs that begs for additional understanding” and that the purpose of the inquiry is to “accumulate sufficient knowledge to lead to understanding or explanation” (pp. 226-227). While I originally thought I would adopt a quantitative stance for this work given my background and previous research experiences, I recognized that to explore the concepts of culture, risk and success/failure, and to find new knowledge, I would need to engage with the actors in the field.

This chapter will address the components of the research design and methodology, including my research philosophy, the theoretical and epistemological approach of my research and the research design. I will also outline the development of the interview guide and protocol, the methods and plan for data collection along with the risks and challenges. Data analysis strategies are also shared.

3.3 Research philosophy

Critical to any thesis is the underlying research philosophy, specifically the researcher's view of ontology (truth) and epistemology (facts) and the subsequent paradigm or worldview that guides the actions related to the work. Ontology is defined as the researcher's assumptions about the nature of reality, with the debate often between realism and relativism (Easterby-Smith et al., 2008). Epistemology, the study of knowledge and its nature, validity, and value, also refers to the assumptions regarding the best ways of inquiring into a phenomenon (Easterby-Smith et al., 2008; Remenyi et al., 2009). Specifically, the ontological and epistemological view of the researcher positions the validity of their work and defines the choice of research strategy. Both the ontological and epistemological perspectives for this study adopt a relativist, social constructionist stance (Crotty, 1998; Easterby-Smith et al., 2008; Creswell, 2014).

3.4 Research paradigm

While Crotty (1998) explores *epistemology* to articulate what counts as knowledge and the nature of inquiry, Guba and Lincoln (1994, 2011) use the term "paradigm" to consider these stances, relative to how the phenomenon will be investigated. Guba and Lincoln (1994, 2011) define a research paradigm as a set of beliefs, or propositions, that define the nature of the world and relate to what constitutes appropriate techniques for undertaking an investigation. Whereas, Tashakkori and Teddlie (1998) propose that it is a system of worldviews that guide the inquiry. Cresswell (2013) suggests the need for the philosophical perspective of the researcher to be clearly understood since it has an influence on both the research purpose and study design. Denzin and Lincoln (2005b, p. 183) define a paradigm as a "basic set of beliefs that guide action. Paradigms deal with first principles. They are human constructions. They define the worldview of the researcher".

The selection of a research methodology and strategy is not simply a decision between quantitative or qualitative analysis. In broader terms, it is inextricably linked to the philosophical stance of the researcher (the *why* of research) along with the practicalities of the plan of action (the *how* of research) including the specific techniques and procedures related to data collection and analysis (Crotty, 1998). Tashakkori and Teddlie (1998) and Creswell (2009) identify four central paradigms/worldviews in social science research, namely: positivism, constructivism, transformativism and pragmatism.

In management research, the three paradigms common in the research include positivism; phenomenology, also referred to as constructivism or interpretivism; and pragmatism, also known as relativism. Table 3 provides an overview of the following discussion on the philosophical underpinnings of this research study.

Table 3.1: Overview of the philosophical underpinnings of research

Term	Positivistic Paradigm	Phenomenological Paradigm	Pragmatic Paradigm
Ontology *Philosophical assumptions about the nature of reality.*	Reality is Objective and Singular	Reality is Subjective and Multiple	Reality is Constructed and Interpretative
Epistemology *A general set of assumptions about the inquiry into the nature of the world.*	The Researcher is Independent	Researcher is Interactive with Data/Participants	Researcher is Interactive with Multiple Data Sources
Methodology *Techniques or strategies used for inquiry.*	Deductive, Context Free (Hypotheses/ Propositions/ Confirmation of Theories/Theory Testing and Generation)	Inductive and Contextual (Questions/Critique/ Theory Generation/ New Insights)	Inductive and Deductive (Triangulation and Comparison)

Adapted from Creswell, 2009; Easterby-Smith et al., 2008).

Positivism is the paradigm generally associated with quantitative research while, at the other end of the continuum, the constructivist paradigm seeks to understand the subjective meanings that individuals construct to explain the work around them (Creswell, 2014). Based on the ontological position of realism, positivism is defined as the view that objects have an existence independent of the knower (Bush, 2007). The role of the researcher is that of objective analyst and interpreter of a measurable, tangible social reality. In contrast, the constructivist worldview gathers both information and perceptions of participants via inductive methods such as observations, interviews, and critical incidents and creates knowledge from the perspective of the participant. The constructivist sees reality as subjective and contextual with meaning generated from the individuals involved (Remenyi et al., 1998). The transformative paradigm/worldview is linked to advocacy/participatory research and has a strong emphasis on empowering a call to action for reform of people, institutions or the researcher's life. The research in this worldview focuses on marginalized groups or people, linking both political and social action to these inequalities (Cresswell, 2014).

A constructivist worldview was considered since I sought to gain a deeper understanding of the world in which I lived and worked. In defining constructivism, Crotty (1998) posited 3 key assumptions:

1. Human beings construct meanings as they engage with the world they are interpreting;
2. Humans engage with their world and make sense of it based on their historical and social perspectives; and,
3. The basic generation of meaning is always social, arising in and out of interaction with a human community (cited in Creswell, 2014, p.9).

3.5 Research strategy

The proposed strategy for this research, to respond to the research questions, is to conduct an investigation using an in-depth interview design and a qualitative approach. This section presents the rationale for these choices.

To garner the information that would answer the central research questions posed, I had to consider what data would be required and the method for analysis. The

questions investigated were related to the subjective views of individuals engaged in the smartphone industry related to organizational culture and success, their perceptions of engagement and integration across departments, their views of risk-taking, failure and leadership in relation to the success, or failure of the company. It was essential to choose an appropriate strategy to capture their thoughts and experiences in a logical manner that was both respectful yet probing to gather the research evidence. Thus, a qualitative approach was selected. The rationale for this choice is provided in the following sections.

3.5.1 Qualitative vs. quantitative methodologies

A primary consideration for research is the choice of a quantitative or qualitative research stance. Great debate exists between researchers related to the quantitative, qualitative and mixed methods approaches. Cresswell (2014) notes that they should not be viewed as rigid and distinct categories yet they represent “different ends on a continuum” (p.3). Crotty (2003) notes the differences between the two occur at the methods level yet may not occur at the philosophical stance (epistemology/theoretical perspective). Quantitative research seeks to predict, verify, and test theories and outcomes. Qualitative approaches seek to explore, to interpret and to understand meaning. While the distinctions between them are often simply framed as a choice of hypothesis-driven relationships between variables (quantitative) or developing an understanding of phenomena through themes and interpretations (qualitative), the difference is more complex in nature. Quantitative researchers seek generalization and replication through the testing of theories deductively, to examine objectively the relationships between variables, protecting for bias and controlling for alternatives to allow them to predict outcomes. Qualitative approaches, on the other end of the continuum, recognize reality as a social construct and seek to gain a deeper understanding and interpretation of the phenomena of study, often with the researcher firmly situated in the experience (Denzin and Lincoln, 2000; Flick, 2007). Each approach is valid, in its own right, depending on the core problem or idea for investigation. Crotty (1998) posits that the researcher needs to be clear about the intent of the research i.e. what is my inquiry

seeking to find out? Central to the choices for methodology and methods are our assumptions of reality and knowledge.

3.5.2 The ontological stance of qualitative research

The adoption of a qualitative approach for this study is linked to my research position. That is, I wish to explore the phenomena of the culture of the smartphone industry in relation to the predictors for success from the perspectives of the employees who are engaged in the development of the innovations. Mason (2002) posits that a key strength of qualitative research is that it allows for the discovery of how “things” work in actual contexts. As I moved from a positivist background, I recognized that I had replaced objectivity with subjectivity, valuing the thoughts and experiences of the actors/players in the industry which changed and differed over time and context and accepting the idea of multiple realities (Creswell, 2013). This social constructionist view (Easterby-Smith et al., 2008; Kuhn, 1970; Guba and Lincoln, 1994) aligns with the intent of this study as it draws on the way participants both construct and perceive the phenomenon of interest. In this work, I explore the worldview of the culture of innovation in the smartphone industry through the perspectives of the people directly involved in the relationship, thus adopting a constructionist approach to my work.

3.5.3 Epistemology

Crotty defines epistemology as “a way of understanding and explaining how we know what we know” (p.3). More broadly, it is how the researcher relates to the research, generates knowledge and justifies knowledge claims. The epistemological stance of the research is reflected in the choice of research methodology.

For this study, my primary focus was the construction of meaning through observations and interactions with individuals, thus my epistemological stance drew on the constructivist context.

3.5.4 A constructionist research design

Unlike quantitative studies that address validity and reliability through statistical tests (normality, etc.) the same terms apply in a qualitative research design. Onwuegbuzie

and Leech (2009) explore the concept of generalization in qualitative designs and posit that the “goal of interpretivist research is not to make statistical generalizations” but rather obtain insights from phenomena in the natural settings and, “attempt to make sense of them with respect to the meanings that people bring to them” (p.883). Others (Curtis et al., 2000; Miles and Huberman, 1994) suggest that qualitative studies may involve making analytic generalizations, i.e “applying wider theory on the basis of how selected cases fit with general constructs” (Curtis et al., 2000, p.1002). Onwuegbuzie and Leech (2009) present instances involving samples of eight and fourteen participants where inappropriate generalizations were made. They posit the researcher should approach generalizations cautiously and attempt to ensure interpretive consistency. It is integral to bear in mind that the goal of qualitative research is not to make statistical generalizations but to obtain insights into a particular phenomena’s processes and practices within a specific location or context (Onwuegbuzie and Leech, 2009, p.890).

Validity draws on the accuracy of the results from the view of the researcher, participants or readers (Creswell and Miller, 2000). The accuracy of the research is assessed using certain procedures. Reliability indicates that a consistent approach is applied across different researchers and studies. Along with the openness and transparency of the research methods used (Easterby- Smith et al., 2008), the following are also considered to address validity:

Authenticity:	convince the reader that the researcher has deep knowledge of what is taking place
Credibility:	the congruence of the findings to reality (Merriam, 1995)
Plausibility:	the research links to similar concerns in the research field
Criticality:	the research encourages the reader to question their prior assumptions (Golden-Biddle and Locke, 2007, cited in Easterby-Smith, 2012)

The majority of research cited in this study is either conceptual or a quantitative design. Most prior studies used in this literature reviews adopt a quantitative or conceptual methodology. It is here that this research is unique. Few qualitative

studies were evident in this research field related to the smartphone industry, with the most notable comprising case studies and interviews that explore the failure of Nokia (Habersang et al., 2017; Vuori and Huy, 2016). Vuori and Huy (2016) used interviews in their qualitative study of Nokia related to how shared emotions and distributed attention impact innovation and success. For this study, I adopted a similar research design and strategy. The key ideas explored in this research are identified in the field and noted in the literature review. I, too, carried out an inductive study to develop a deeper understanding of a firm's success or failure through a participant lens across 8 smartphone organizations. This research adopts a different methodology and design, using a qualitative stance, and I posit that this is a central contribution of this work. The design of research and the methods used for data collection attempt to provide rich, thoughtful answers to the research questions that align with the concerns and areas of exploration identified within the field and current literature.

3.6 Research design

For this qualitative study, in-depth interviews were conducted with both current and former employees in the smartphone industry. Data includes interview data, text analysis and thematic interpretation (Cresswell, 2014). The data analysis method employed for this research is thematic analysis. A central contribution of this thesis is that it adopts this research design in a field that is dominated by conceptual and quantitative studies. This section describes the research design for this study, with a focus on the approach, methods, data collection, analysis, and how the constraints were addressed. Likewise, I present challenges related to bias as well as my personal bias as an active participant in this study. Drawing on the work of Cresswell (2014), I acknowledge that I assume an "insider role", noting that my experience in the field of innovation informs my position and perspectives on the research. While my firm is not in the smartphone industry, I am an entrepreneur based in Silicon Valley and quite engaged with the players in this industry.

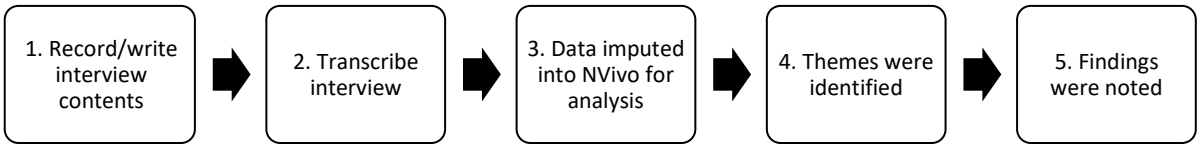
The essential purpose of the thematic interview is to develop insights into the research questions from the lived experience of the participant. Burgess (cited in Easterby-Smith et al., 2008) suggests that the in-depth interview provides the

researcher the prospect to delve intensely to uncover new dimensions and “secure vivid, accurate inclusive accounts that are based on personal experience” (p.131).

3.7 Interview research

For this qualitative study, interviews were conducted, both in person and via Skype. The data came from interviews conducted between June 2015 and September 2017. The interviews were carried out in three rounds, and the data was analyzed between each to inform subsequent questions. A total of 28 interviews with managers and engineers across 8 companies were completed. Each was contacted personally and assured anonymity. An average interview lasted about one hour. All of the interviews were recorded and transcribed, and careful notes were taken. This semi-structured interview guide focused on the key research questions and acted as a guide for the interview process. Figure 3.1 outlines the data collection process.

Figure 3.1: Interview Protocol



Source: Author’s conceptualization

1. Interviews were recorded for transcription purposes.
2. Recorded interviews were manually transcribed into electronic documents.
3. Digitized responses were uploaded into qualitative analysis softwareNVivo for analysis, to compare data amongst participants.
4. Any common findings, as well as differences amongst groups, were noted.

3.7.1 Developing the interview questions

The design of the interview questions was based on a semi-structured format that included structured questions based on the key research themes while allowing for additional questions and ideas to emerge. This interview format was chosen versus an informal conversational interview (Turner, 2010). While there were themes that I wanted to explore based on the literature review, I wanted both structure and flexibility. Creswell (2007) notes that an informal interview may be both inconsistent

and unreliable, posing challenges for coding. Instead, a general interview guide was developed that was structured yet allowed me to adapt the interview to explore a more personal stance and approach with the participants. McNamara (2009 cited in Turner, 2010) suggested that a semi-structured interview design ensures that similar information is collected from each person interviewed and provides the interviewer with a more conversational approach while still allowing some degree of freedom and adaptability.

The flow of the interview was designed to put easier questions at the beginning to help create ease for the interviewee, followed by questions of increasing difficulty before concluding with open-ended questions and an opportunity for further input. The question design was both flexible and open (Hill et al., 2005) with the intent of ensuring that the experience of the participant was both captured and valued. Several iterations of the interview questions were developed in consultation with Rotman faculty and research colleagues from Henley. Edits were made to ensure that the questions were open-ended and objective. The interview protocol and research links are noted in Table 3.1.

Table 3.2: Interview Guide and Research Links

Interview Questions	Themes Explored	Research
Brief discussion of job role and work with the company	Culture	
Let's talk about NPD, how would you say the process was initiated? How were goals set within and across the departments? To what degree were you encouraged to come up with a completely new idea/product?	Innovation Goal Setting Attitudes towards Risk and Failure Organizational structure Culture	Miles and Snow, 1978; Cooper, 1983, 1984; Kim and Mauborgne, 2017; Gupta et al., 1986; Griffin and Page, 1983; Leenders and Wierenga, 2002, 2012; Fain et al., 2011; Rubera et al., 2012
Were you involved in cross-functional teams? How comfortable were you trusting the other departments and their work?	Cross-functional Teams Integration Trust, Culture	Miles and Snow, 1978; Cooper, 1983, 1984; Kim and Mauborgne, 2017 Daugherty and Hardy, 1993; Abbie and Hauser, 1996; Cooper and

How open are you with your team, manager, and colleagues about work? What do your meetings look like? Was importance given to rotation between departments?	Leadership Organizational Structures	Kleinschmidt, 1991; Vincent, Bharadwaj and Challagalla, 2004; Hauser, Tellis and Griffin, 2004; McLaughlin et al., 2008; Prakash and Gupta, 2008; Slater, Mohr and Sengupta, 2014; Popa et al., 2017; Wind and Rhodes, 2017; Davila and Epstein, 2015; Vuori and Hoy, 2016
What were your incentives and reward structure? How much importance was given to learning new skills related to new technologies in the market?	Incentives and Rewards Skill Development and Learning	Gupta et al., 1986; Griffin and Page, 1983; Leenders and Wierenga, 2002, 2012; Fain et al., 2011; Rubera et al., 2012 Gupta et al., 1986; Griffin and Page, 1983; Leenders and Wierenga, 2002, 2012; Fain et al., 2011; Rubera et al., 2012
Follow up questions on specific themes or points of interest; ask for examples if possible.		
Are there any other questions that you feel are important to understanding this company that I should have asked but did not?		

3.7.2 Testing the interview guide

Prior to using the interview guide with the participants, it was essential to field test the interview questions. To do this, I engaged trusted colleagues in the industry, research colleagues, MBA students and my supervisor at Rotman. At first, the questions I had designed were quite lengthy. This may have caused confusion and lengthy interviews that would be a challenge for the participants. After several iterations, and reviews with colleagues, the questions were finalized for the initial set of interviews. As noted in Table 3.1, I also ensured that I allowed for the possibility of additional information. These interviews were completed in three rounds.

3.7.3 Interview protocol considerations

As noted, a semi-structured interview design was used to gather specific information and allow possible comparisons between the organizations. Also, the design was flexible so that further probing could occur to explore participant responses and pursue emerging ideas. All interviews were conducted face to face, either in person or via Skype. The in-person interviews were conducted off-site, at a location convenient for the participant, either in Toronto or Silicon Valley.

Researchers (Musselwhite et al., 2006; Knox and Burkhard, 2009) suggest that face to face interviews promote more openness between the research and the participants since the researcher can build a trusting connection. The relationship between the interviewee and the researcher is critical since the openness and trust created strengthens the validity of the data (Kvale, 1996; Knox and Burkard, 2009). Conversely, Shuy (2003) argues that phone/Skype interviews allow for uniformity and consistency while reducing interviewer effects such as nonverbal data. Musselwhite et al., (2006) suggest that this nonverbal data may cause potential bias due to informant reactions to an interviewer's body language or expressions.

I recognize the limitations and rewards of both. Due to participant availability as well as financial, time and physical constraints, I designed the study to use both Skype and in-person interviews. The development of the interview protocol was essential to the success of these interviews and mitigated differences between both interview settings so that there were no differences between the responses of informants.

Both prior to and during the interview, settings were chosen that had little distraction or interference challenges, confidentiality was addressed, the format was explained and participants were encouraged to maintain contact if they had further questions or required more information (Turner, 2010). During the interview, the interview guide was used to stay on topic and to be considerate of the time frame of the interview.

Along with the preparation of the interview questions to address the key research ideas, the interview protocol attempted to ensure the following prior to and during the interview process, drawing on the suggestions of Easterby-Smith et al.,. (2008) who suggest the following:

- Build a logical flow to the questions for the interview.
- Use jargon-free language, yet it must be relevant and aligned with the participants.
- Avoid leading questions and straying off topic.
- Confirm that the recording equipment works, plan for an alternate strategy (notetaking) so that the data is captured effectively and clearly.
- Confirm the time and location of the interview, reiterate privacy and confidentiality.

From my perspective, each interview went well. Each interview recording was reviewed again once I had the transcriptions completed to ensure the alignment between the text and the recording. The use of the interview guide was beneficial for providing structure and timely responses. All the participants were interested in the study and freely shared their thoughts and experiences.

For the eight Skype interviews, consistency was ensured in the use of this protocol, including the arrangement of the meeting space and setting to minimize distractions and to establish a trusting, comfortable setting for the interview. Given my frequent use of Skype in my own work, I ensured that the setting was as non-distracting as possible.

3.7.4 Addressing bias

This type of research is also subject to potential bias (Chenail, 2011; Turner, 2010) and this limitation is recognized. Poggenpoel and Myburgh (2003) posit that in qualitative interviewing, the researcher can pose the greatest threat to the trustworthiness of the research, particularly if not well-prepared, modest and reflexive during the interview process (Chenail, 2011). To address potential bias, careful preparation was made for each interview, ensured that the interview protocol was used consistently and that a similar interview tone, both verbal and non-verbal, was adopted for each session. From my perspective, the participants were relaxed during the interview and both open and willing to share their perceptions of the learning

experience, particularly as the interview progressed. A further acknowledgment of potential bias will be discussed in Chapter 6 related to the limitations of this study.

3.8 Data analysis process

To effectively capture the richness of the data generated from the interview process so as to generate meaning from the data and answer the research questions, it is essential to adopt a disciplined process for analysis. The method adopted must be both consistent, logical and transparent so that meaningful conclusions may be made, and to ensure trustworthiness. With the intent of answering the research questions, using the key ideas and constructs generated from the research question and literature, there is also the likelihood of new ideas and findings (Flick 1998; Miles and Huberman, 1994).

3.8.1 Description of the method

Thematic Analysis (TA) was chosen as the method for identifying ideas and analyzing patterns in the dataset. It allows the researcher to organize and describe the data set in detail and illustrate which ideas or themes are important in the account of the phenomenon being studied. Braun and Clarke (2006) note that thematic analysis as a method is foundational to qualitative research since it provides the generic, core skills needed. It is also flexible since it can be applied across a range of theories and epistemologies and, as a tool, has the potential to provide a richly detailed and multifaceted account of the data. Unlike other analytical methods used to describe data patterns in qualitative research - such as discourse analysis and grounded theory - Braun and Clarke (2006) suggest that thematic analysis can be used within different theoretical frameworks and can serve as a method which works to both “reflect ‘reality’ and to unravel the surface of ‘reality’.” (p.9). Joffe (2012) notes that themes are patterns of both explicit and implicit content and thematic analysis is an effective method to draw on both types. In this work, the specific analytical method utilized would not have altered the results but instead would have affected the path to those results and addressed bias differently.

Central to thematic analysis is the concept of ‘theme’. Braun and Clarke (2006) along with Joffe (2012) define this term to mean an idea that captures important details

about the data relative to the research question and represents a specific patterned response or meaning from the dataset. The themes identified in a study may be based on both inductive and deductive ideas. The current research in the field of innovation provides the theoretical and managerial ideas that are the foundation of this research (deductive), creating preconceived ideas and categories, *a priori* themes. Boyatzis (1998) suggests that naturally occurring themes present in the data, that is, the researcher remains open to new concepts or ideas that emerge. While the established, deductive themes many replicate, extend or negate existing studies, it is the inductive, emerging themes that may create new knowledge. Joffe (2012) contends that thematic analysis offers the researcher a systematic structure for analysis, not just related to the frequency of themes but the conceptualizations of the phenomenon of study.

While thematic analysis is flexible and easily adopted, critics of the method suggest it is disadvantaged in comparison to other methods such as phenomenology, grounded theory, and ethnography and may result in inconsistencies and a lack of cohesion when identifying and developing themes (Braun and Clarke, 2006; Holloway and Todres, 2003). King (2004) suggests that it forces the researcher to ensure a well-developed structure for managing the data to ensure a clear, organized report of the findings.

Thematic analysis was completed using qualitative data analysis software, NVivo 11 (QSR International, 2015).

3.8.2 Use of qualitative data analysis software

Similarly, for the qualitative study, software options were considered and used. While I used frequent note taking and Excel for organizational purposes, I chose to use NVivo™ 11 for data analysis. This software was introduced as part of my research program. It allowed for the indexing of the interview textual data and facilitated searches of keywords and phrases. I was able to create my template for data analysis within the software and it allowed me to organize my data, manage the analysis and identify categories and themes. I used the established a priori themes for the initial template; others emerged via data analysis, particularly during the first round of interviews. NVivo requires the manual intervention of the researcher to

create these codes and structures for analysis. I did not employ the auto-coding function since I wanted to explore and analyze the data through my own lens. While Miles et al., (2013) caution that using qualitative software may imply the use of programmatic approaches to analysis, I was conscious of the need to be constantly reflexive in my work.

All of the interviews for this research were recorded on a portable device and then transcribed verbatim into Word documents as soon as possible after the interview was completed. This timing was in place since the element of recency allowed me to recall the interview and address any challenges with words or sections that posed challenges in the transcription. I also took brief notes during the interview, with permission, but these were not transcribed. Instead, I used them to keep track of the questions and jot down any key ideas I wanted to address or consider.

The data analysis process employed several tools and strategies. Initially, to systematize the approach in analyzing interview transcripts, a master template consisting of *a priori* themes, that I had identified in the research, was used to capture core information from each transcript. The template facilitated analysis of the factors I was exploring based on the review of the literature, including organizational structures, culture, leadership, and integration. Later, for each of these themes, comparisons between each organization was made, distilling the core and common themes within each group, and summarizing significant findings.

Initially, I re-read all of the transcripts by organization to capture the overall story of each one. After this, I then began to code the data in more detail, identifying key ideas/words and overall themes. This was a time-consuming, iterative process since each transcript was reviewed in detail to identify patterns that would answer my research questions. As patterns emerged, I would again review each transcript to ensure that I had gleaned the information I was seeking. The concepts of structural flatness and functional secretiveness were emergent themes that I would never have considered. Similarly, the ability to fail was a concept I was familiar with but I was unaware of the importance it played when it came to innovation. The richness of qualitative research is tied to this emergent nature and thus has the potential to generate deeper insights.

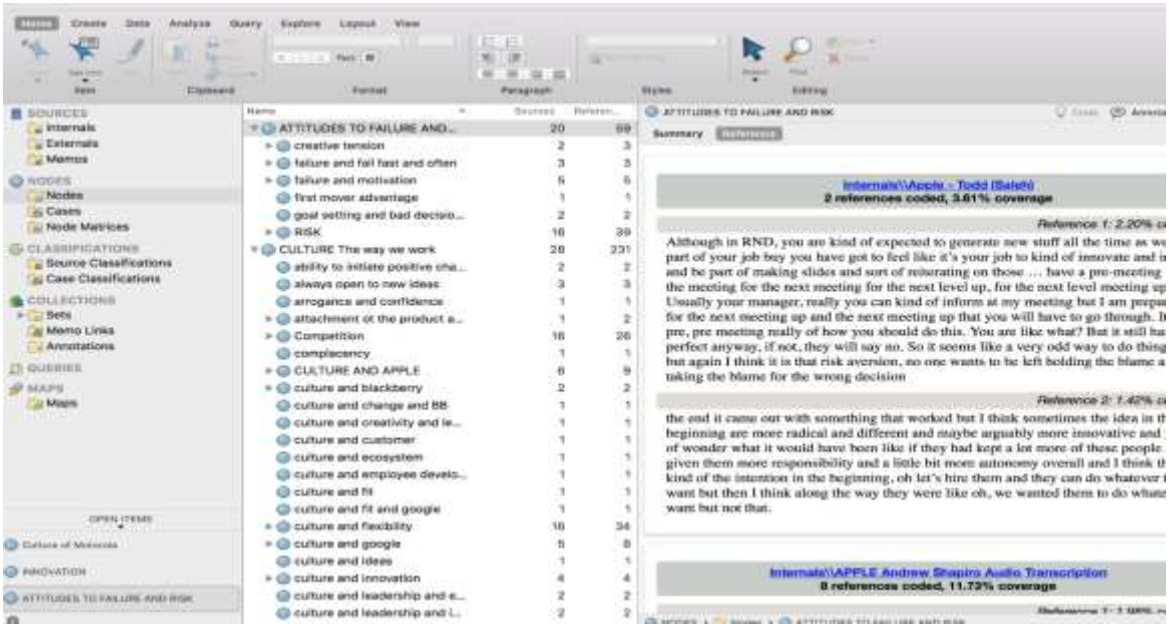
3.8.3 Coding

As noted, NVivo^{TM}11 was used to assist with the coding process for this research. Flick (2014) notes that coding includes “the constant comparison of phenomena, cases, concepts, and so on, and the formulation of questions that are addressed to the text” (p.307). Strauss and Corbin (1990) suggest that coding may be defined as the operation by which data is broken down, conceptualized and put back together in new ways. It is the exploration of key concepts and the formulation of the networks or relationships between them (Flick 2014).

For the first step, I engaged in open coding. Key text was highlighted and codes identified using both established *a priori* codes as well as emergent concepts.

The software was used to sort and categorize the codes into key ideas or themes. At this stage, multiple codes were reviewed and either combined under another theme/code or kept as is. The software assisted in identifying *Nvivo* codes i.e. actual quotes from the interviewees. I continued with this coding process, selectively combining the codes into central themes that I was able to compare within and between the interviewees and organizations. This interpretative procedure was iterative and continued until saturation was reached. This clustering of themes and concepts arranged the data in a consistent manner that allowed the formulation of responses to the research questions, with the intention of making an informed contribution to both theory and practice. Figure 3.1 shows a sample of the coding process.

Figure 3.1: Sample of codes in NVivo for interviews



As a researcher, I reflected on common ideas, differences, and emergent themes and often went back to my literature to review the findings from similar studies. I also engaged in this process with my supervisor on a regular basis. This iterative process was continued until key themes were finalized. Excel spreadsheets were also used in conjunction with NVivo to capture the keywords and ideas that were emerging. This process led to the identification of central themes across all interview transcripts, which will be discussed in detail in subsequent sections of this thesis.

3.9 Research setting, selection of informants and access

3.9.1 Sampling

This study adopted a repeat cross-sectional study over three different years in which subsequent samples of new participants were interviewed from each of the identified smartphone companies. Purposive sampling was employed since I deliberately wanted to focus on participants involved in new product development in the smartphone platform industry. Bernard (2002) and Eitkan et al., (2016) note that with this non-random technique, the researcher “Decides what needs to be known and sets out to find people who can and are willing to provide information based on their knowledge and experience” (p.2). For this target sample, the focus was attaining potential interview candidates in the smartphone industry across the engineering, research and development, and marketing sectors, from which I could then draw insights. This homogeneous sampling allowed me to delve into precise similarities and how they related to my research. Teddlie and Yu (2007) suggest that this sampling technique allows the researcher to 1) find instances that are representative, and to 2) achieve comparability across different cases of the dimension of interest (p. 80). Teddlie and Yu (2007) note that this type of sampling is common in qualitative research, often with a typically small sample size (usually 30 cases or less). Flick (1998) makes clear that there are outside determinants that influence the number of cases in a sample size, including finding participants, which suggests that the methodological and epistemological considerations should be more important when answering the question of “how many”. Adler and Adler (1987) loosely suggest a sample pool of 30, while cautioning that a “hypothetico-deductive” focus on the subject pool may demonstrate a fundamental misunderstanding of the purpose of

inductive research. With this in mind, I targeted 30 interviewees and ultimately completed 28 interviews over the course of my research before reaching saturation. Table 3.2 outlines the key elements of this sampling, as well as how these elements applied to my study.

Table 3.3: Purposive sampling technique

Dimension of Content	Purposive Sampling	This Research
Overall purpose of sampling	Designed to generate a sample that will address research questions.	Focus on participants across the smartphone industry who were involved in New Product Development.
Issue of generalizability	Sometimes seeks a form of generalizability (transferability).	Generalizability is sought to transfer the new knowledge to a broader scope.
Rationale for Case Selection	To address specific purposes related to research questions. The researcher selects cases she or he can learn the most from.	A specific focus on participants who worked in engineering, marketing or R&D.
Sample Size	Typically small (usually 30 cases or less).	Sample size for this study n=28. The number of interviews varied across companies. Targeted efforts were made to have at least 2 interviews per company but in one instance, this was not possible.
Depth/breadth of information per case/unit	Focus on depth of information generated by the cases.	Lengthy interviews were conducted with each case and thorough analysis conducted.
When the sample is selected	Before the study begins, during the study, or both.	Sample selection was both prior to and during the study.

How selection is made	Utilizes expert judgment.	Selection was made based on my industry knowledge and experience as well as my research for the literature review and subsequent interview design.
Form of data generated	Focus on narrative data. Numeric data can also be generated.	Narrative data was generated and analyzed.

(Adapted from Teddlie and Yu, 2007)

A concerted effort was made to secure interviews with professionals who had worked during the 2008-2010 period in which the technology had experienced the biggest change; later interviews included professionals who were currently working in the industry. Rather than just focus on a few companies, like Blackberry and Google, I broadened my scope to capture a group of cases across the smartphone industry. Possible participants involved in R&D and product marketing were selected via LinkedIn and alumni networks from multiple universities. I also drew on my professional network in the industry. The target groups included current and past employees in either marketing or Research and Development in the following companies: Apple, Google, Motorola, Sony, Blackberry, Samsung, Nokia, and Palm.

Related to sample size, Teddlie and Yu (2007) suggest that an important issue in qualitative research involves the saturation of information (Strauss and Corbin, 1998) versus the representativeness required in quantitative research. According to Krueger and Casey (2000), *saturation* is the term used to identify the point when the researcher has heard a range of ideas and is not obtaining any new information. Fusch and Ness (2015) suggest that saturation is reached when there is ample information to replicate the study (O'Reilly and Parker, 2012; Walker, 2012), when no additional new information is attained (Guest et al., 2006) nor further coding feasible. Teddlie and Yu (2007) posit that there are no clearly established standards to determine how large a sample should be to demonstrate trustworthiness. Brannen (2008) notes that it is not the sample size *per* se that matters, nor the distribution of numbers within a group, but the inclusion of a case since it may be pivotal to the

analysis. Bryman (2012) cites Warren (2002), suggesting between a minimum of twenty to thirty interviews in totalfor a study to be published (p.425). He contrasts these numbers with others ranging from sixty to one hundred fifty as a maximum. His candid explanation of these numbers ultimately points to the contentious nature of sample size in qualitative work. Ultimately, Bryman (2012) posits that regardless of the sample size, it is crucial for the researcher not to make inappropriate inferences from the data collected and to ultimately focus on saturation as opposed to sample size.

In this research, a sample size of 28 was used. Each in-depth interview captured rich data based on the experiences and knowledge of the participants in the industry. While some companies were represented by more participants, such as Google, saturation was generally achieved within companies after several interviews, once common themes and ideas emerged and were consistent across companies. After twenty interviews, it became clear that no new themes were emerging, irrespective of the company, thereby confirming that saturation was achieved from a conceptual perspective even though the number of interviews for each company differed. The rich data (Dibley, 2011) obtained was both intricate and nuanced, providing deep insights into the phenomenon of study.

Central to addressing saturation is my own role as researcher, and the need to acknowledge my bias/worldview, both intentional and unintentional (Fields and Kafai, 2009). Chenail (2011) suggests that a researcher's cultural and experiential background contains bias, values, and ideologies that can affect when the data is acknowledged as saturated (Bernard, 2012). As part of the high tech industry, I am part of the cultural world of the participants and brought my own perspectives to this work (Denzin, 2009). At times, it was difficult to hear and understand the perspective of the participants without injecting my personal lens (Dibley, 2011). As a result, I spent considerable time creating the data collection protocol and the interview script, sought multiple sources of data within and across companies to explore different perspectives, and engaged in thoughtful analysis to ensure that I made sense of the data. I also made sureto demonstrate the richness of the findings to ensure validity (Denzin, 2009; O'Reilly and Parker, 2012; Teddlie and Yu, 2007). I further addressed

bias by engaging in an iterative process with my advisor to review my analysis and results, seeing as my advisor is far removed from the industry.

3.9.2 Ethics

The research askedthe participants to share their insights and experiences in the smartphone industry. They needed to be assured of the confidential nature of the work (Miles and Huberman, 1994). Each participant was provided with an email that outlined the nature of the study and was assured of privacy, confidentiality, and anonymity as per the research protocols. By responding to the email, the participants noted that they were agreeing to participate in the study. The benefits of the research were noted and participants were invited to request a copy of the work once completed or withdraw from the study if desired. Permission to record was also requested from each participant.

Individual, semi-structured interviews were conducted at a time and place convenient for the participant. All the interviews were conducted off-site, either via Skype or in person. Each interview was recorded with the permission of the participant and the duration of the interview was one hour on average. Notes were taken during the interviews and the recorded interviews were transcribed as soon as possible after the completion of the interview. This allowed me to review and reflect on each interview, integrating my notes and checking for transcription errors and/or clarifications. The interview transcripts were then uploaded into NVivo and used for data analysis.

3.9.3 Profile of the participants

Table 3.3 outlines the 28 participants in this study. While I attempted to engage both genders in this study, all the participants were male, which is characteristic of the industry. Several attempts were made to engage women in the interview process but these attempts were unsuccessful and present an opportunity for future research. All of the participants had engineering and/or business degrees. While the companies are listed for comparison purposes, the participants were assured of confidentiality due to the highly secretive and competitive nature of the industry. Some participants have worked at multiple companies; for the purpose of these interviews, the focus was solely on the company noted in the participant profile.

Table 3.4: Participant Profiles

Participant Code	Company	Role	Interview Location
1	Apple	Sales Lead/Trainer	In-person
2	Apple	Global Supply Manager	In-person
3	Apple	Engineer/iPhone Operations	Skype
4	Apple	Metal Program Manager/Iphone	In-person
5	Apple	Software Engineer	In-person
6	Apple	Director, Hardware Development	In-person
7	Blackberry	Director, Carrier Group Manager	Skype
8	Blackberry	Product Developer/Apps/Social Networking	In-person
9	Blackberry	Director, Consumer Services Core Product Management	In-person
10	Blackberry	Team Lead, Audio/Hardware Team	In-person
11	Google	Android Browser Team Lead	In-person
12	Google	Product Marketing Manager	In-person
13	Google	Android Partner Engineering	In-person
14	Google	Business Development Lead, Android Wear	In-person
15	Google	Software Engineer	In-person
16	Google	Manager, Market for Product	In-person
17	Google	Team Lead, Mobile Apps	Skype
18	Google	Product Manager	Skype
19	Google	Team Lead, GPU Programming	In-person
20	Motorola	Manager, Engineering	Skype

21	Motorola	Director, Moto Mods Developer	Skype
22	Nokia	Technical Project Manager	Skype
23	Palm	Product Manager/Product Marketing	In-person
24	Palm	Marketing Manager/Product Development	In-person
25	Samsung	Java Developer	In-person
26	Samsung	Manager, Product Development	In-person
27	Sony	Product Development	In-person
28	Sony	Sales Director	Skype

3.10 Trustworthiness

Unlike positivist research designs, which seek to address the trustworthiness of the study by addressing reliability and validity, this study does not adopt this paradigm. Guba (1981) outlines the following criteria to address the trustworthiness of a qualitative study: credibility, transferability, dependability, and confirmability. Table 3.4 outlines how these criteria were addressed for this study, aligned with the work of Shenton (2004).

Table 3.5: Addressing trustworthiness (Adapted from Shenton, 2004)

Factor	How to Address	This Study
Credibility	▪ Adoption of appropriate research methods. ▪ Familiarity with the culture of the participating organizations. ▪ Triangulations via different types of informants and sites. ▪ Iterative questioning, peer scrutiny, thick description of the phenomena under study.	A qualitative method is adopted for this study that is drawn for similar research. As a business person in the tech industry, I am strongly familiar with the culture of the organizations involved, both in Canada and Silicon Valley. To address triangulation, multiple informants and sites were investigated. A constant review of the literature was ongoing during the study and I engaged critical colleagues to review my questioning and analysis.

Transferability	▪ Provide background data to establish context and detailed descriptions to allow for comparisons.	Data is provided of the setting and participants as well as the context of the study.
Dependability	▪ In-depth methodological description to allow the study to be repeated.	An in-depth description of the research methodology adopted for this study is provided for comparison and future research.
Confirmability	▪ Triangulation to reduce the effect of bias. ▪ Admission of research beliefs and assumptions, recognition of shortcomings. ▪ In-depth, methodological description, clear audit trail.	These elements are addressed in this chapter.

3.11 Constraints

Several constraints were identified and addressed during this study. These included time and location for the interviews, availability, and accessibility of multiple study participants for each company and the challenge of part-time study. Each of these was addressed as follows:

3.11.1 Time and location

As a venture capitalist and entrepreneur with several new start-ups, the time to dedicate and complete these interviews was a challenge. The different time zones and office locations of the participants could pose challenges as well.

3.11.2 Availability of study participants

The smartphone industry is highly competitive and secretive. While I was willing to meet the participants either in person or online, several had to decline interviews due to the timing and nature of their current work in new product development. In some cases, as noted, only one participant represents a company and this is recognized as a limitation. All the interviews conducted were used for the data analysis in the discussion of the general themes.

3.12 Summary

This Chapter addresses the central research questions and methodological considerations. The philosophical stance of the research is shared and an overview of the research design and strategy is provided. The data collection process and sample is outlined along with the challenges associated with this study. The next chapter, Chapter 4, presents the findings from this data analysis.

Chapter 4: Presentation of Findings

4.1 Introduction

The purpose of this research is to explore the culture of innovation in organizations to determine the organizational factors that contribute to successful transformative innovation, as defined in Chapter 1, Figure 1.1. Central to my research is an exploration of the interrelationships between divisions, the mindsets towards experimentation, risk and failure, decision-making processes, organizational structure, goal setting, and the overall culture. The central question of this thesis is to explore whether there are key identifiable cultural and structural factors that impact organizational success and its ability to exhibit transformational/radical innovations. This chapter presents the detailed findings of this research in a systematic manner. This qualitative study examines the relationship between variables related to culture, risk-taking, leadership, team integration, and incentives and their relationship to an organization's ability to demonstrate continuous, transformative innovation. The previous chapter outlined how the data was generated, prepared and reduced for meaningful analysis. This chapter uses this data to answer the research questions, share what the data revealed and suggest key outcomes of the study. The central questions and sub-questions explored in this chapter include:

1. What are the key factors that define the culture of innovation of companies in the smartphone platform industry that contribute to transformative innovation?
2. Does a comparison of successful versus unsuccessful companies yield distinctive factors that impact their success?

Within these main questions, a number of sub-questions were generated that were derived from the extensive literature review:

a) Is the innovation process clearly defined within the organization?

b) Is there a process for new learning and idea generation?

c) Is there encouragement and structures for risk and failure?

d) Are incentives and rewards evident?

e) Does the organizational culture and structure promote or impede innovation?

f) What is the impact of the organizational structure and culture on innovation?

g) Who engages in leadership and decision-making?

h) Is collaboration and integration evident and supported?

i) Are vision, strategy, and goals clearly defined?

j) How does leadership impact innovation?

The analysis in this chapter uncovers systematic relationships between the factors discussed above and the ability of the organization to create transformative innovation. In addition to deploying a qualitative approach, these findings represent the contribution of my study.

Section One of this chapter identifies the overall themes that emerged from the interviews with the participants across all companies. It concludes with a summary of these key themes.

Section Two of this chapter presents the between-case comparisons of four companies - Apple, Blackberry, Palm and Google - which suggest the impact of the identified constructs on an organization's ability to innovate. These companies were chosen since Blackberry and Palm were the most successful early entrants while Apple and Google were later entrants and are currently the most successful. As identified in Chapter 1, successful companies for this work are defined as organizations that are able to grab market share, and maintain or grow it. This analysis also identified key factors that contribute to organizational success. From the examination of the transcripts, four themes were identified, with sub-themes for each. Each of these themes will be examined in depth, as identified in Figure 4.1.

4.2 Section One - Interview analysis

Figure 4.1: Key themes

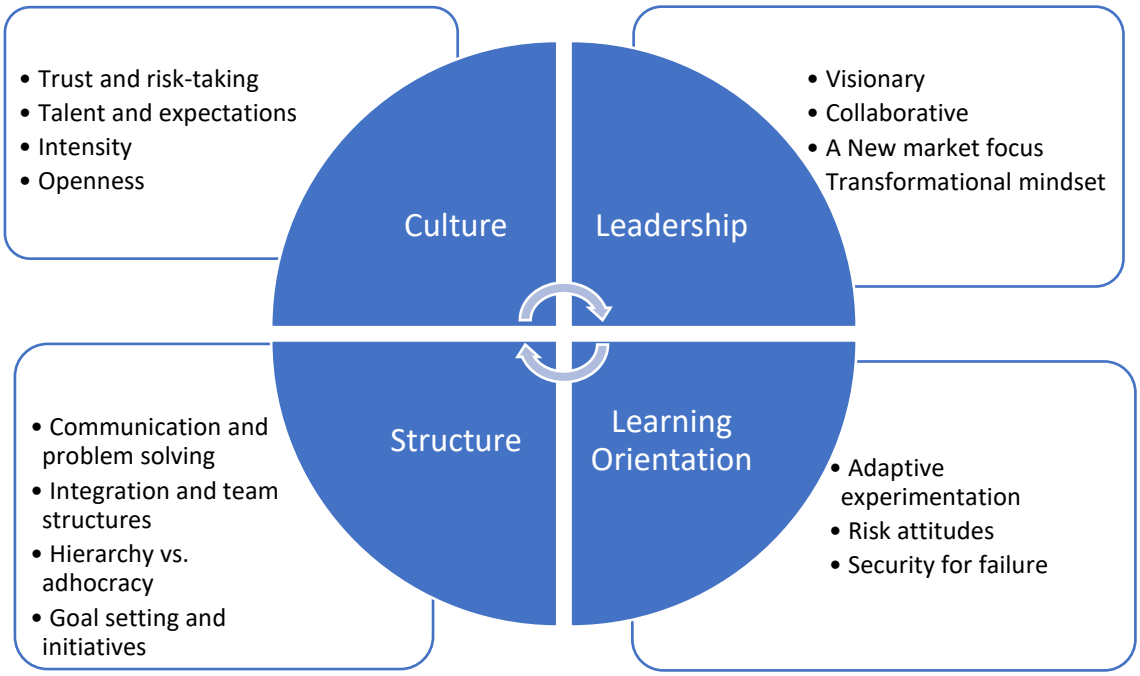


Figure 4.1 identifies these major themes, supported by sub-themes throughout the analysis. The purpose of this analysis is to explore the culture of innovative organizations to identify if there are factors that contribute to their past and future success based on the perspectives of employees. The distinguishing factors are the systematic differences between organizations that can deliver transformative innovations versus those that can not. The perceptions of the employees provide valuable insight into the culture and structure of these innovative organizations. There are a number of key findings that emerged through this process relating to the research questions that were derived from the review of the literature. This part of the data analysis was related to the presence of constructs identified in the literature review, emergent themes which were driven by the data, and the similarities or differences of responses from the participants. These findings are indicative of the impact of culture, leadership, mindset, and structures on an organization's ability to create transformative innovations. The key themes align with the previous literature and are drawn from the insights of key informants in the smartphone platform industry.

Each theme will be discussed in detail along with supporting evidence from the interviews with the participants.

4.3 Organizational culture

> *You just create a culture that facilitates those meetings - like one in maybe ten thousand interactions might actually lead to something pretty cool. (Google, P13)*

> *So that is going to determine how success happens. You may wake up one day and say, "we are going to innovate," but if you never really had that mindset, and you don't have that skill set in the company to do it, you can't just do it automatically. It's really difficult. (Samsung, P25)*

The identification of organizational culture factors that impact the ability to create radical innovation is central to this research. I questioned participants about cultural elements, i.e. "the way we work here" and explored concepts such as trust and respect, the ability to bring new ideas to the forefront, experimentation, innovation, and engagement. I delved into details about their work environment, identity and how they "fit". Each participant was open in telling their version of the corporate story and how it links to culture. It was also evident that these participants were quite engaged and committed to radical innovation, noting frustration with the organizational culture if it was not supportive.

4.3.1 A sense of trust and a culture for risk-taking

Participants recognize the importance of creating an engaging, inclusive culture in order for experimentation and innovation to occur - noting the power of the team and relationships in generating new ideas.

> *I think the best thing to do is… personal relationships, so something you can do is co-locate where the departments arelocated near one another and as ridiculous as this sounds, social interaction between them. You need to have a situation where these people know each other… and they eat lunch together, they hang out, they go to grab drinks after work*

> *together. So there is an element of trust that you know those people are actually out there working to help you achieve your goals. I mean it sounds so simple but it boils down to human relationships. (Samsung, P26)*

Managers see their role in creating this ecosystem as one of trusted decision maker, a facilitator of ideas and people, and someone who recognizes the powerful strength of the team. Many state that it is a 'choice' to remain in this culture of "super smart people",

> *I want to provide an environment where everyone feels like they can contribute because I am not a magic orb in the back room who is going to come out with all of these brilliant ideas. Really, they just come from the collaboration and experimenting… and randomly saying "Whoa, the best ideas [are] sometimes the ones you can't put your finger on where they came from. You have to create an environment where those ideas can come from. (Google, P17)*

> *When I talk about culture, I mean… the ecosystem that has been built. So in other words the role of managers [is] unblocking and being a sounding board. Also if you are making the decisions and people trust in you,all of that is one. I think the second part is sort of obvious , you have super smart people. I would say that is probably one of the most important [things] to me… everyone chooses the product that they work on. It is super, super powerful in the sense that when you get up in the morning… it changes a lot of dynamics…like you are here because it's by choice and if it wasn't your choice, you could go and look for another product to work on. (Google, P18)*

Trust is a critical element of an effective culture for innovation. It dominated many of the conversations, often grounded in the knowledge of the employee's abilities. Managers referred to 'trust' in relation to the expectations of employees:

I think they trust us to try to come to consensus beforehand but in the case of where it can't happen, we provide the point of view and then they make the decision. (Google, P17)

Employees on the other hand value the trust that is placed in them and their work, including the mutual trust relationship:

He didn't help me but he trusted that I would be able to fix it. So I know [that] this is my stuff, I started it out, I have to clean it up. I do it and he says "yeah do it," and then says "I knew you would do it". (Apple, P6)

I trust that my manager will put the right person to take care of that. (Apple, P1)

From this sense of trust stems a commitment to strong performance and dedication, both within and across departments.

It's a culture of trust… people go to bat for each other, especially within the department because we have our own pneumatics that we want to attain as a department.Everyone is working to help each other and if support is required there is always someone to help you out. (Apple, P2)

It is evident from the interviews that there is an inherent trust present in employees. This helps in maintaining the secrecy between the departments while creating a team environment. When a department assigns a task to another department, there is an automatic trust that the other department will deliver the task in a timely manner with utmost quality. This aligns with the research that high levels of trust between teams increases the probability of bringing innovation to a company.

I would say Nokia has done a very good job spreading, or making, that culture of trust very strong. (Nokia, P22)

Conversely, the absence of trust had a negative impact on an organization. Without trust, collaboration, and knowledge sharing, integration does not occur - instead creating an atmosphere of internal competition that detracts from the ability to launch

new products. This absence of trust led to wastage of time and resources, delays in innovative projects and ultimately, missed opportunities.

> *What was probably missing was the integration part. What would rather happen was "No, no, no, I am going to do everything. I am going to keep the knowledge here and not there (other divisions)." When this happens, the system efficiency goes down. That trust …goes down. In the long term, it doesn't help. (Blackberry, P10)*

> *The only thing I would trust is my customer and I don't trust my own team. (Sony, P28)*

4.3.2 Culture, talent and expectations

> *Hard work is important but having innovative, brilliant ideas is much more important. (Samsung, P25)*

Coupled with the sense of trust is the high level of expectations placed on emplo0.

yees. Many participants attribute the rigorous interview process for attaining high performers who are a '*culture fit, driven and very enterprising*" and with this status, comes the expectation for success. One manager noted, "*Even when I interview somebody … the first thing I see is how passionate is this guy about Apple? How passionate is he to basically do something that is crazy as it can be and then without looking at how much he is investing internally?" (Apple, P5)*

Newer employees also are empowered by the level of expectations and the work that they see:

> *It was just taking responsibility for success, I don't think they taught it to me, it just kind of came naturally to me. I sort of said, "I am going to need to measure not only my physical output today but whether this thing that all these people are working very hard to do, is actually going to achieve what the company wants it to do." You end up becoming inspired by thinking about how hard everybody else is working around you. (Blackberry, P9)*

The participants easily identified key employees, interns, and structures within the culture that were central to the success of the organization, recognizing the high expectations and results of each:

> *We had a team called the prototyping team. These guys were some of the most brilliant hackers that I have ever met, including one kid who was a co-op student and there is so much of what defines (the company) today [that] was made by him. (Blackberry, P9)*

This focus on people andon “culture fit” is central to innovation, ensuring a balance in the team. One participant said, “*I like the balance of experts in the fields but also generalists that are able to flex and challenge the more traditional way of doing something because otherwise, it gets difficult to be innovative.” (Google, P19)*

Talent is hired and supported, often aligning work with passion. Nevertheless,yet high standards and outputs are again expected, whether for a senior or new employee:

> *I would say it is dependent on your own desire.There is plenty of work to go around, so if you have interest in something and are passionate about something, then yes, you are supported but at the same time people are expecting you to do your job as well. (Google, P11)*

A strong sense of commitment and passion was evident across all interviews, even in the organizations that were not experiencing current success. Interestingly, one participant noted that while loyalty prevailed after failure, the work environment lacked the same sense of collective and change focus as it had in more successful ventures:

> *The next day I’d come back and he’d be back to where he was before. He was a loyal guy. There was a nucleus of people at RIM who built the Blackberry and they went through hell to build it. It was very successful and they had conviction and what worked. The stuff that you had to do to survive after*

the iPhone launch was very different and collectively they could not bring themselves to embrace those changes. (Blackberry, P8)

4.3.3 Intensity of the culture

There is lots and lots of work. I am very … I would say there is no work/life balance at all, really, and I see people who are crazy to work on weekends on their own without anyone asking them, just to … I don't know why but that happens. (Apple, P5)

We are the best and you better be the best. (Apple, P6)

The pace of this industry culture is demanding. While the participants value the work that they do and feel rewarded for it, there is no question that even with support, the work culture is intensive, fast-paced and exhausting. Turnover is referenced in some of the interviews, in relation to the intensity of the work culture:

I mean everyone here is very competent, most of the people around me are...like everybody works really hard. Attrition at Apple is also very high. People who leave, they see the culture around here and they will potentially leave within six months, [they] cannot work in this kind of environment. So either they leave in six months or they are let go in six months so attrition between zero to six is very high. Then, two years is really high because people usually jump ship - they see better offers. Those who decide to stay, just get along. (Apple, P4)

Others note that it is difficult to plan too far ahead, and that one has to stay *"in the moment"*:

There is constantly things going on...there is really no time to think ahead, it's like you are constantly trying to just keep up with what's going on because they are very fast days. (Apple, P3)

In high pressure, high performance cultures such as these, burnout is not uncommon. From a culture stance, participants identify supports put in place to address these environmental challenges so that the intensity of the work is somewhat balanced with the high expectations, coupled with good benefits and compensation. While the benefits exist, the participants suggest that there is still a high pressure to engage and perform constantly:

> *The culture is ... I guess in a way it's kind of like you are expected to work as much as you need to get things done but because everyone is constantly working, there is so much…pressure to be there, like all the time. You kind of burn yourself out just trying to be there all the time…with the big name and things like that, you don't want there to be any issues. Even on weekends when you might not necessarily have to go, if everyone else is going to be there, there is a little bit of pressure for you to be there just to make facetime and things like that. So I feel like you kind of tend to burn yourself out in that type of culture. [In] a lot of ways they build an environment where you are comfortable there anyways, like they have food all the time. It's not free like a lot of the other places, but the food is really good…they have ten or twenty types of cuisine, they have specials every day, fruit drinks and stuff like. They make you comfortable so you feel it's kind of worth it to be there sometimes, plus they pay you well. (Apple, P3)*

4.3.4 Openness

In a culture that drives innovation through trust, high expectations, and risk-taking, one of the most interesting themes that emerged related to the level of secrecy or openness within and between divisions, and across the organization. Specific technology developments were not discussed at any time during the interviews, instead focusing only on the ideas and themes related to the culture of innovation. In essence, the sense of secretiveness contributes to the aura of innovation, creativity,

and disruption. Within each organization, certain findings stand out, such as the use of black cloths on new products or isolated locations for product development.

> *If you asked me to describe the culture professionally in one word, I would say it is very secretive because part of the allure of it is "What are they going to do, what are they going to do this time?" There are rumor mills on blogs everywhere that say, "oh I think this is what they are going to do".When you take the products, when we take the products from one street to another, we have to put black cloths on them and something like that. (Apple, P3)*

> *The team that was focusing on this new OS project, it was such a highly confidential, very stealth project that we were actually isolated in a separate building away from the rest of the (Palm) team. That entire team, including engineering, product management, product marketing, other support services around the OS, we were all essentially isolated in a separate building away from the rest of the company. (Palm, P23)*

Conversely, within the same organizations, openness and collaboration are essential to learning, experimentation and ultimately, innovative success. While secretiveness is required for some projects, generally there is free sharing of information and ideas that are essential to growth and development. In truly innovative cultures, participants suggest that *"there is an opportunity for nearly anyone working on it to push an idea" (Apple)* if they think it contributes to economic viability or a better design.

> *The culture here is very collaborative and helpful and I'd say that is a distinct difference between every other company I have worked for. In other contexts, I have seen information hoarding, where information is viewed as "my advantage," therefore, "I will not share information with you." Whereas here, information is shared extraordinarily freely and I think that is an enormous advantage. (Google, P17)*

It really is a cultural thing within the company and it's very hard to change because it is the essence of the company that creates that. It isn't like the company made that decision, that is effectively what they are based on - their heritage, the staff, and the culture. (Sony, P27)

4.4 Learning orientation and attitude towards failure

4.4.1 A culture of adaptive experimentation

> Agile innovators move quickly to come up with a minimally viable product that they can test, employing tight feedback loops that test, learn and test again…a focus on continuous improvement. (Ringel et al., 2018, p.15)

In the smartphone platform industry, the focus is more than continuous improvement, it is about dreaming big, taking risks, failing fast, learning, and succeeding. Successful innovators are constantly learning, taking risks, they have an external focus,and they seek differentiation. Their vision does not encompass incremental change; a true culture of innovation demands creativity and risk-taking in order to be disruptive. Failure is not celebrated; it is normalized. Smart experimentation is based on calculated risks. Successful innovation is about 'moonshots':

When JFK commissioned a team to put a man on the moon, they said, scrape away all the assumptions and rather than improving things by ten percent (10%), improve them by ten^{x}. Sometimes innovation or problem-solving can be done better by throwing away all [of] your assumptions, just taking a tiny little team and dream big - rather than dreaming incremental[ly]. It has to be 10 x exponential. (Google, P14)

So, what does this successful culture look like? My participants shared many insights into how this risk-taking and creativity is both demanded and supported. "Fail fast, fail often" is an oft-heard mantra in this industry. It is evident that in successful companies, this holds true - and goes deeper. The ability to fail and to take risks is data-based and results-oriented, and must always include a backup plan. Aligned

with the sense of trust is the ability to debate, to experiment, and to attempt new ideas without fear of retribution or blame:

> *Some will be great and some will fail but then if you are really on to something, you can really innovate too, and [you] will be supported. (Google, P16)*

Innovative cultures concentrate on being at the forefront of the industry. To be disruptive, it is essential for the culture not to be risk-averse, and to nurture creativity - both within and across teams. Participants talked about their experiences with failure and risk, describing the flexibility, support, attitude, and vision of their work:

> *So it was very much a team effort, trying to build the best product.In terms of failure, there wasn't a blame game or anything that went on like that.If it's your department's job, you have got to be working on that, you have got to finish that. It's like "Alright, we hit a bump in the road, this is what happened, this is what we need to do to correct it, who are the actionable people who can act on this and just get it going." They don't really dwell too much on any negative aspects of what they have been building, they don't want to start playing the game of pointing fingers because that just distracts from what their ultimate goal is. It's like, "Alright guys, let's go and figure out what are some new options, let's test them out, let's source them, and let['s] keep going on this new iteration -. enough pointing out who's in the wrong, type of thing." What we are doing - everything is new, nobody in the world has done it before… so we go ahead and build new stuff. (Apple, P2)*

As noted before, successful innovative organizations do not have a culture of blame; rather, they have a culture of support, prudence, and backup plans. An innovative culture supports decision-making that is both creative and data-driven. This again points to the culture of trust and expectations previously highlighted.

The participants acknowledged both their own role and that of their managers/teams in product development, indicating a strong sense of pride, accountability, and engagement:

> *I mean a sense of pride when people ... usually you are like "Yeah, I work with what you are using on your phone, I make it," You feel a sense of attachment to it, like if the phone sales are doing well, you feel proud about it. You get attached to it and it kind of becomes your life in a sense. (Apple, P3)*
>
> *My peers and my managers are guiding me - "be careful on certain steps." If I am the one who is saying [this], then I am the one who has to put in more effort and I have to do some things. (Apple, P5)*
>
> *You have been hired by one of the top companies because they believe that you can contribute. You need to contribute or you will not be there for very long - If you can't operate under the sense of respect for the company, of admiration and appreciation that you have that position. (Apple, P2)*

In some cases, the culture of the organization demonstrated more of a top-down influence which was not as supportive for risk-taking, despite the intent to foster a risk-taking environment :

> *It's funny you should say that. They could definitely say what should or shouldn't be done but whether it happened was another story. They had the influence down, so they would be able to influence the project managers who would in turn be influencing the development teams, hardware, and software teams. Sometimes you are going to get unilateral decisions at the executive level and that can frustrate the product manager - if they don't feel like [they've] sort of been given total control of success or failure of the product. Ultimately … I think everyone was treated fairly and respected and I think in that sense, people's opinions were heard and respected.*

> *We carried the same weight, not necessarily all of the time. (Blackberry, P7)*

In other instances, levels of risk-taking are calculated and product dependent:

> *I would say depending on the products, organization… risk becomes more calculated and you take it in a more controlled way. [With] avery mature product, we take risks in ways that are more contained, for example, if you have a new feature which is super controversial, there would be a lot more attention on whitelisting the right people, on who you give access to [in order] to contain the negative consequences. If you think about our entire promo cycle and all of that, essentially at the end of every quarter you score yourself and the OKR (Objectives and Key Results) you set are usually very quantitative.“Okay, I set potential goals of "x" or "y" or "z", and in the sense that you together with senior management set very ambitious goals, that drives you, in my opinion at least, to think more outside of the box. [You] usually place different facts and different levels of risk… some pan out and some don't and then in the end you learn the game over time. Then you calibrate your understanding of the space and what works and what doesn't. Overall, I would say yes, you are encouraged to take risks. (Google, P18)*

The terms “Risk” and “Failure” are quite connected for the participants and aligned in their work, as noted in their comments. I was specific in using these terms in order to elicit their responses. They spoke freely about failure and its impact, providing their own experiences and explaining how failure fits within the culture of their organization, suggesting that this attitude permeates the organization and links to the vision. They indicate that failure is essential to their own learning and corporate success.

> *Failure, yes … I would not say that it is taken very badly. It's not only like a failure I would say, we should rather look at it as what is better and what [is] the best thing we can do - and that is not only in [the] context of today, it is in the context of time. So what is best today may not be best tomorrow, and this keeps happening. (Apple, P5)*

> *I think that is definitely something that's part of the vision that top management has, that you should fail fast and fail often and I think that is the reason why it kind of permeates everything. (Google, P15)*

> *Failure is absolutely expected as part of the culture, there is failure in multiple respects. If something breaks or crashes or goes down or causes an outage, it is an "understand and not blame" culture. So you are not going to get blamed or in trouble. In fact the first thing that you do if something blows up is raise your hand and say, "Hey, I broke x, y, z," and you focus on how to fix it. (Google, P17)*

> *Things are very public and open about this and the rest of the company can help and learn from these failures. So I think we do kind of share … there are a lot of failings that happen where you can go and actually look at… what were the lessons learned and how can [you] apply that to your own processor for processing - you can do that. (Google, P11)*

Not everyone alludes to a positive culture for risk and failure, though.

> *If I fail, I need to explain why I failed and why my team failed at the target. There will be consequences. (Sony, P28)*

By creating a culture of blame that did not support risk-taking, creativity, and engagement within and across teams, a climate for innovation degenerates. Talent becomes disengaged, frustrated, and moves on:

> *A lot of good people go, like when a lot of the people just left and went away. A lot of people went to Apple, Amazon, BOSE, Microsoft - they were really good people. (Blackberry, P10)*

From several informant perspectives, risk-averse cultures were evident. These participants suggest that they were encouraged to take a tried and tested path to avoid failure, a major inhibitor of innovation.

> *I think it was not the best experience seeing that, the way Blackberry first went into this kind of a denial mode. "Oh no, no, no, we are the best. No one needs the best in the world camera, why would they use [this] camera, why do they need the touchscreen?" And when you hear things like this, you can raise a question mark. (Blackberry, P10)*

Coupled with risk-taking, support and flexibility contribute to an external focus on outcomes and achievement - and that allows the organizational culture to consider and address the needs of their external environment and customer. This type of adhocracy culture focuses on flexibility and creativity, encourages risk and uses customer/market knowledge to drive new product development and performance.

> *It's going to fail, we already know the answer - there is always a probability that it is going to fail. What we decide to invest in an experiment, for example, we will be wanting to get that experimental result because we believe solving the problem is going to be of some value. So you have to think about and articulate a measurable impact. Then you have to think a little harder, because if you can't measure the impact, then what are you doing? At the end of the day, we are not going to question the user, the user knows best. The question is, how do we run an experiment that teases out from the data what the user finds the best? (Google, P17)*

> *IfI feel like I am working on the product that people are using every day and millions of people are using, I actually feel*

> *good about it. It's kind of cool to see what types of new things they come up with. (Apple, P3)*

Trust and pride, intensity and support, risk-taking and failure, secretive and open collaboration, and vision and support are common themes that echo across the participant interviews in relation to organizational cultures that create disruptive innovation. In contrast, organizations that did not have these elements, that had cultures of blame and risk aversion instead, lost talent - the same talent that was central to the creation of transformative products. While originally grounded in the pride and satisfaction of success, these cultures became mired in blame, distrust, and did not support the continuous innovation needed to sustain success. Organizational culture is closely linked to the processes and structures instilled to encourage innovation. The next section will explore the organizational structures and processes that are adopted to support transformative innovation in the smartphone industry.

4.5 Organizational structure

> *If you try to cram creativity, not necessarily the best thing, you need some deadlines, you need some constraints. The other thing I would say applies generally is that [what] we really try to do here is unconstrained brainstorming, totally unconstrained . [It] can be kind of counter-productive, and I think of musically creative fields, highly constrained. There are notes, there are measures, there are time sequences, there are enormous numbers of rules that you have to follow with music. Despite that it is extraordinarily creative - so that constraint…could be money. How could we make that work? Just as a thought exercise, put some constraint, and then by putting in that constraint it forces you to focus and you can come up with some really innovative solutions, as opposed to being completely unrestrained. There are a million different approaches, and that also depends on the team. Some people are comfortable doing some stuff and some people*

> *want it very structured and they want to have a process. Other people just want a random block on the whiteboard and then you narrow it down. Part of that is up to the dynamics of the team, what works the best. (Google, P17)*

This thoughtful analogy from a Google participant captures the essence of my exploration of the organization's underlying structure for radical innovation. This structure is comprised of innovation and creativity, open brainstorming and constraint. When cognizant of the rules, competition, and financial impact, the implication is that these constraints spur 'really innovative solutions'. Within these highly innovative organizations, I explored their organizational structure - the team configuration, integration, constraints and overall organizational structures that the participants suggest are integral to their success.

As noted in the literature (Cakar and Ertuk, 2010; Dovey, 2009; Martin-de Castro et al., 2013; Popa et al., 2017; Prakash and Gupta, 2008; Senguin, 2010), studies of successful companies suggest that functionally divided, hierarchal structures impede innovation. Flat structures, on the other hand, are free from these constrains and organize themselves around cross-functional teams that are multidisciplinary and communicative. This does not imply that structures are not in place - rather, they are fluid, adaptable and organic. The organizational structure is designed to ensure time for creativity, and it is flexible. Systems and processes for communication and rewards are designed to acknowledge employee expertise, encourage dynamic problem solving and support creative discourse.

> *If you have an idea and it makes sense for what you are doing, then they will always listen - I mean they are not like hierarchy and stuff like that ... they always welcome innovation. If you don't innovate you will be done. (Apple, P3)*

In my conversations with the participants, I focused on the structure of the organizations - the systems for internal information sharing, the management of innovation projects, collaborative structures, and processes that support cross-functional teaming and integration. I also focused on communication and problem solving, the organizational structures for management, and strategic goal setting for

employees in order to investigate if there were differences between the companies and the resultant impact on the ability for radical innovation. These elements include the communication and problem-solving processes, the interdepartmental integration of teams, the movement between teams, andthe overall structure of the firm, i.e. if it is hierarchical, market-centered or adhocratic. Each is explored in more detail in the following sections.

4.5.1 Communication and problem-solving processes

As noted previously, the sharing of new thinking and collaboration is a key cultural element for radical innovation. All participants identified a variety of structures for communication and collaboration that exist with their management and within teams. One participant outlined a specific structure for daily communications during an intensive time that ensured problems were resolved, deadlines were met and all teams were supported:

> *Usually the daily standards happen when you have a large number of teams working together where you want to make sure communication paths are open and that is what a daily allows you to do. [It] identif[ies] blocks or whatever might be blocking a team and you kind of identify those and try to get them resolved on an urgent basis. I think this happens when a number of teams are involved, there are stricter deadlines when you are closer to release dates and you want to make sure nothing is blocking people… which is when daily sign-ups happen. (Google, P11)*

To support idea development and creative “unblocking”, others identify meeting structures and the use of professional tools to identify the impact of unconscious bias and personal styles on decision making. In successful firms, there seems to be a focus on both data and character, knowledge and empathy, intelligence and emotion. It appears that self-awareness is a critical component of the innovative mindset. That is, to be innovative, you have to be agile and empathetic, adopting an open culture that balances both knowledge and emotions.

> *If you are in a meeting and you have a point of view, you can raise that but you should fully expect people to ask you to back it up, to challenge you. Recently we had a ... sort of an offsite and we discussed some of our character traits and did like one of those surveys that you always do and one of the things that didn't come up across almost anyone on the team was a trait about being very self-assured because it was almost like everyone felt that they could be challenged and they were willing to adjust their point of view based on logic. I like that idea, that you are not set in your ways, you are willing to challenge and change based on what the data and logic is telling. (Google, P19)*
>
> *We are constantly trying to do things to encourage - we have training, drill training for…bias removal, for not derailing meetings, like how to basically let people's voices be heard because everyone is really busy. Everyone is working really hard, long hours and it's almost like you might hear something quickly from someone who might be a little tepid to say something like "stupid idiot." Sometimes it definitely affects innovation. So we are constantly trying to train people to be self-aware when they are doing that, if you are shutting down someone during a conversation, if you have some unconscious bias that you do not realize. At least when you train people to recognize when it happens you can reduce the time to cope with it when it happens. Bigger companies are harder, smaller companies are so much easier, more agile. (Google, P13)*

Conversely, lack of formal structures for engagement inhibited effective problem solving and organizational growth. While communication was constant, informal structures created angst and anger. Teams operated in silos and lacked defined opportunities for creative discourse and problem-solving. The following quote

illustrates that the lack of structured systems, and a heightened sense of reactive urgency, caused a decline in the relationships across the organization.

> *At Blackberry, there were very few structured processes. There was intense informal communication and [it was] constant. If you didn't respond to an email from (senior management) or respond within a few minutes, it's like … "You don't respond to my email, I'm going what happened? Has our relationship gone sour, have I lost social capital with you?" That's how it worked. Everybody talked to everybody all the time and if you didn't respond you'd get in trouble for it. So how do these things happen? I They happen when (a company) is very problem-oriented, focusing on what isn't working, and "What are we doing about it?" (Blackberry, P8)*

In unsuccessful organizations, lack of communication across divisions was evident.

> *I think my case was [a] little bit different because my division is very niche, so we stay in touch with each other…but I can't speak for everybody.I think there was a silo. (Blackberry, P10)*

> *I think this is a problem because the marketing people were not able to communicate it. Maybe it is not going to go straight to the marketing people, maybe he is going to go to the project manager and the project manager is the one who is going to interface with the marketing guys. (Nokia, P22)*

In successful firms, within the formalized yet open communication structures, are opportunities for 'constrained brainstorming' and idea sharing -"open ways to make them easy to feel off those ideas". These include scheduled forums for idea sharing, direct emails, "coms meetings" where employees can discuss and debate ideas, ongoing prototype development, and week-long project/idea development sessions. This also encourages opportunities for formal integration and new team development.

4.5.2 Integration and structures

> *So … engineering and then program management, they go hand-in-hand. Then, the sales team interact[s] with the program manager and that is basically how they…come up with something which is very new and it percolates throughout the environment. (Apple, P5)*

As evidenced in the literature, integration across departments is an essential structure for innovation. In my interviews, we explored the integration possibilities and structures within the organization and the ability to move between departments. It is obvious, from these perspectives, that formalized integration contributes to an organization's innovation ability and subsequent success.

One participant drew on his previous work experience with an established, traditional,multinational organization to compare the emphasis placed on integration and collaboration in his current role:

> *It's very different from a very top-down process that you would typically see. The organization tends to be a lot flatter and you work within a group and you get relative freedom to choose what group. You save half way through four of our groups in our organization and [there is] almost zero resistance to that topic. As little as a quick interview with the person… we will click on the button and you will be in that group. So it's very different. (Google, P15)*

Investment of time and talent is aligned with product cycles. Ideas generated within and across teams are supported.

> *Here, pretty much if you have an idea, within the next release cycle you can get it into the product -if it's a good idea or if we need it for some particular reason. So one of the things that is really shocking is just how ad-hoc [and] opportunistic the whole process is.We have someone who can do something, okay, go ahead. If we needed something like that, let's have*

> *that person do it. So things work out … and all through the entire process, all through my entire career here, it's been very… go ahead and design it. So it's very different from a very top-down process that you would typically see. (Google, P5)*

> *In case the product does not work out… it's not really marketing support per se, because it's a free product. Marketing would certainly be another voice - you build almost a consensus, you rue the ideas of hierarchy and structure. This is an engineering company so at the end of the day stuff gets done because you have engineering excited. (Google, P17)*

Experimentation is essential for transformative product development. Successful, innovative companies support flat, opportunistic structures that encourage this, building excitement and consensus, and integrating teams and ideas in a "no-blame" culture.

Conversely, in companies that experienced a decline, the process for integration and innovation was controlled by senior management. One interviewee suggested that the process was 'sluggish":

> *Another problem that BB had was that they got clear of middle management and it made it a little sluggish, the whole process. They had this culture of ... "Okay, okay we will do it." It was [a] very slow process and then can't expect that in the research and development… or innovation-oriented company at the global level, you can't. Ideas were lost, there were a lot of ideas given by our teams and I am sure other teams did as well. They were lost. So innovation was not appreciated or encouraged, (they) bottled them up. (Blackberry, P10)*

Isolation and team leadership also inhibited integration, and ultimately, innovation**.** It is interesting to note how the team as a whole, and individual personalities, such as

those identified in the conversations on work culture, were also dominant in my findings on the integration of teams:

> *Sadly the culture of those teams working on Web OS… it was not great. I think part of it was the isolation, the effect of kind of isolating a team. I think if you are going to isolate that team then you should work really hard to make sure that that entire team becomes as tight-knit as possible. Even in that kind of silo, there were fractures and a lot of that frankly came from the personality of the leaders. The gentleman who led engineering was not necessarily someone who was very outgoing, and was [not] someone who kind of fostered a community and deep collaboration. I think that personality kind of trickled down and manifested in his lieutenants and other people who were managing the project. Even similarly on the marketing and business side, you had an individual who was kind of leading that team [and] who was just not experienced enough in terms of leading, driving deep collaboration, innovation, a sense of community teams. Unfortunately I think that kind of contributed also to there being a long gap of time between when the product actually made it out to market. So I think the moral of the story is that in any development effort, you need to foster a sense of community, collaboration, and togetherness, and unfortunately those teams did not have that. (Palm, P23)*

Despite a flat structure, the findings suggest that there is a specific design strategy for integration that is product dependent, linking again to communication strategies. It appears that this is a strong component of a successful culture, or as the interviewee states, “it’s just the normal process as things go through that way”:

> *Again it depends on the project but I would say in general at Google, it’s kind of architected so marketing talks to product and product talks to engineering. That’s not something that*

> *you can't circumvent but that is sort of the normal flow. Like, I will talk to the product managers and then they sort of manage what engineering is building on their side and then they will come back to us with: "Oh yeah we can't do this, we are not going to be able to do this, we are going to be able to do that." When crunch time comes, IO for example, I was talking to engineers every day and I was like "Oh yeah I got to go set up [a] demo phone, I need your help, can you put the build on here, can I get an AVK over here?" All these things sort of happen a little bit more fluidly but in general I would say that my relationship is closest with our VPNs on Android pay. They are sort of the conduit between us and engineering if anything should happen there. But I know all the engineers by name, we are all friends, it's not like there is a gap there, it's just the normal process as things go through that way. (Google, P12)*

In both successful and unsuccessful firms, the "culture of secretiveness" is evident in relation to new product development. I consider this to be "functional secretiveness." Cross-integration of teams is strategic and project dependent. In some instances, as in the Palm and Apple examples provided, these 'small, defined teams' were created and isolated from the larger group, with little or no interaction with other teams. This is especially interesting to note for Palm, since it originally experienced great success with its smartphone platform.

> *In this case, the team that was focusing on this new OS project, it was such a highly confidential, very stealth project that we were actually isolated in a separate building away from the rest of our team. Now we still had interactions with them, I had a lot of interactions with some of the other marketing teams as we got closer and closer to launch. We would, of course, engage with them.There were meetings with the CEO to kind of brief him on the progress of the project but it was very interesting. That entire team - including*

> *engineering, product management, product marketing, [and] other support services around the OS - we were all essentially isolated in a separate building away from the rest of the company. (Palm, P23)*

> *Apple products are all connected with each other. If I need to coordinate with this team who creates it, it's going to get done so everyone is working with each other on a certain level. If you don't need to know, if you won't add any value by knowing, then they won't tell you. You don't tell other people what you are working on, people tend not to ask either because everyone knows…I am not supposed to tell him what I am working on and he is not supposed to tell me. (Apple, P3)*

For all, it is essential that the teams are "tight" when it comes to innovation and product development:

> *It's not you, it's just the whole team working. If something is not working then everyone will just jump in to fix it. (Apple, P4)*

The challenge to maintain this integration and flat structure is evident when the market is more competitive and the organization is under stress. In several cases, the interviewees referenced terms like "top-down" in reference to the organizational structure and its lack of integration when in trouble, or as one interviewee stated,

> *When the economy is booming, you can do some of those more vague, fluffy kinds of things and the economy dies or dips. Business development pretty much goes away except for sales. That is what happens, companies don't fund all of these fluffy what-if kind of things - let's come up with an idea - instead it becomes, we have widgets to sell, somebody go sell them. That is what it reverts to. (Sony, P27)*

Opportunities for integration and NPD were lost.

> *Things had gone down the track by then. We weren't that engaged early on and I think we may have helped a bit more there, but it was a little bit later on and they would have already made some ideas.. (Blackberry, P7)*

> *Product readiness, lining up all the post-production elements like marketing programs up to sales, the collateral for [the] product, the pricing for the product - Blackberry worked as a healthy tech company. A lot of the stuff happened at the director and management level, lateral function to function, like a pick-up game, no one was really watching anybody. It was just happening because people knew their jobs. When we got in trouble under competitive stress it got stranger, it would be more executive engagement. Whenever in distress the company started to be more top-down run versus more lateral and when it got more top-down it got more dysfunctional and it's harder to explain how it worked because it wasn't organic.When things break down though, war time, it gets varied, it gets stranger. (Blackberry, P8)*

Within non-formal integration and collaboration processes, a sense of competition between teams on their products, i.e. working in silos versus working towards a common goal, was also evident.

> *It was a very product oriented, a very "my product" success story. We were all working as individual companies competing with each other rather than working towards making Blackberry the number one phone. It was more like making my product number one. It's harsh to say that but I think it is very ... not very far away from the truth. (Blackberry, P7)*

4.5.3 Movement between teams

As evidenced in the literature, both the integration of teams, and the movement between them, is critical to innovation. The majority of the participants discussed this freely, using terms such as “synergy”, “freedom” and “excited”. While job roles are titled and defined, in some organizations there is freedom to move around the organization, allowing the employee to “go above what is expected”:

> *So I think that freedom actually exists quite a bit and in addition to that I think the roles… are quite different.They are of course well defined in terms of what your job duties are and kind of what is expected of you but you can actually go above and beyond what is kind of expected of you. You can think of new product ideas and mention those product ideas to the leadership or to the product management and not so much marketing, because marketing kind of happens towards the end. Typically, engineering works with product management, so you can always pitch ideas to product and work on them. A lot of the time the work that engineers end up doing is that they might come up with an interesting idea, start working on it on their own for a while, and once it actually grows a bit, then you can pitch it. Product engineers get a lot of other people excited and then they are going to start that role. (Google, P11)*

Across both successful and unsuccessful companies, movement between divisions was somewhat supported, and often related to project success:

> *There are winners and loser[s] in those things but if you lose badly enough, you can just go look for another position within Google - if you don’t like what you are doing enough. (Google, P15)*

> *I think that that is something that interests a lot of people, right there, especially for young people. Older people would rather stay where they are because they don't want to learn*

new stuff and Nokia supports that as long as it makes sense. That is encouraged; however, I think there are a few people that I know that don't take advantage of that. I think people want to stay where they are. I think the work we are doing here, you are trying to be an expert in one area. Making it happen or not making it happen is if it fits within the business goal in the larger scale. (Nokia, P22)

It wasn't encouraged as such because then you're stirring the pot. If somebody wanted to do it and there you see a synergy and post developable, then yes, it was okay. (Blackberry, P10)

The movement within and across the divisions of an organizationlinks to the need for integration and cross-functional teaming in order to foster effective NPD.

4.5.4 Hierarchy vs. adhocracy

The hierarchy is there but it's not there at the same time. So I think that also helps with innovation because it also means that anyone feels that they can be the source of a brilliant idea. (Google, P17)

As evidenced in the literature, innovative organizations thrive in a market centered adhocracy while hierarchal organizations do not. In this previous section, this was alluded to by the participants who called attention to structures that were "flat", "ad hoc", 'organic," and "top down". Even in the most innovative organizations, the participants shared their views with all organizational levels, from C-Suite senior leadership to other levels, with broad goals "trickling down". While these formalized roles are mentioned and respected, differences emerge. It is evident that the most successful companies place value on employee idea generation and creative discourse.

You need to be of a culture where there is not a waiting for the oracle in the corner office to come up with it, Certainly here there is a lot of bottom-up elements at work that are not

> *waiting on an RSVP or the founders to say this is what we are going to do. One of the first things I ran into a couple of years ago, I kind of had the sense that there was one person sitting [there who] had a lot of experience and maybe they were a pretty senior person. It turned out they were a very senior person of [re]search but it's the organizational structure that is not obvious… through hierarchy, not where people are sitting or any of that.You can do meetings with someone who's , recently out of school but owns a product, as an associate product manager.He or she is the key person at the table because they have the knowledge. (Google, P15)*

The participants value the formalized role of managers to provide support and 'unblocking progress,' noting that "typically, decisions have been decentralized … ninety percent of the decisions are made that way, if not more." Likewise, they suggest that they are involved in "decisions of emphasis, not decisions of new things to do", and that they are engaged in setting priorities, broad goals, and strategy – all the while keeping the big picture in mind:

> *The organization is very flat and there are different groups. Since it is so flat, between me and the CEO there are four layers of management. So execs are everything and they hold a lot of power so they know what is wrong with my piece, the next piece, the next piece. Then there are the program managers who bring them together and show… a consolidated view. We are a part of this and leadership knows it. (Apple, P4)*

Within these adhocracy structures, the emphasis is on idea generation and execution, not the position:

> *If there is an idea and it makes sense for the project, there isn't too much of an ego that will kind of limit that idea from coming up. Everyone wants to contribute to developing the best product and if that means an idea, whether it's from an*

ops guy or a design guy - helps the project - it will be taken seriously. (Apple, P2)

Several participants noted the change from “flat” to “top-down” structures when the company, while still successful, came under stress - with an emphasis on “a lot of degrees from the top going down”. In these instances, the organization had a looser, shared decision-making structure which, when challenged, reverted to a more hierarchal model:

When you are prosperous, the institution is loose in the joints and you can do a lot of things without a lot of central orchestration. So if you had a good idea at Blackberry in its growth mode, at first you had a lot of latitude to go pursue it as an executive, outside the (senior) team. Whenever in distress, the company started to be more top-down run versus more lateral and when it got more top-down it got more dysfunctional. (Blackberry, P8)

It was mostly top down, I would really say so - it wasn't bottom up, it was top down. You were told what to do and then you would see if all the ideas,and [the] patent that you had put together, which one could be implemented - instead of, “Hey, what do you think?” (Blackberry, P10)

The tone of the interview changed in this discussion as one participant,who eschewed wearing suits, noted the casual yet engaged nature of the management structure.

Informal. It’s all informal, I’ve yet to encounter a really formal discussion here, even at a Larry (CEO) level. I’ve been in meetings in other capacities where Larry (Page) is in the room and Larry is in jeans and tee shirts and drinking a bottle of water and walking around the room and looking at toys and stuff and it’s all casual up and down the chain. If you see someone at Google in a suit, it’s either a lawyer or they have

> *a public engagement… they have to go in and impress. (Google, P15)*

While trust was evident in both the preceding and subsequent account, the difference was stark - suggesting more evidence for the success of the flatter, casual organization. “Orders” and “soldier” are not representative of a team that is innovation-focused. While having a common vision and aligned goals that build understanding and engagement are central to success, this central, directorial perception is more aligned with an industrial, hierarchal model:

> *I know that no matter what kind of order I get, I just say that you need to act like a soldier and make sure that you fulfill the order first hand.For example, if I am giving an order to a team, I have my reasons but maybe [they] don't sound logic[al]. If everybody started to question me - why I am giving this kind of order - you can imagine that I need to spend a lot of time explaining. I think…in my work… whatever order we get, what target we get, we just need to make sure we fulfill. (Sony, P28)*

Interestingly, while formal structures for integration exist within flat organizations and ultimately contribute to successful innovation, the work to maintain this lies at the senior level, which must work to align the vision and acknowledge the constraints, performance issues and challenges that come with success. It is a paradoxical structure, requiring both the formalized, high concentration of talent and energy within specific structures as well as the fluidity of organic structures. An organization can only continue to be fast, agile and innovation focused when both elements are in place:

> *Once the success started to happen for real, then it became other groups wanting a piece of that same success in some sense and Larry wanting now to sort of merge everything..it’s seamless. We’ve reached a point where now the mail client is done by the mail team, the browser is done by the Chrome team…the ‘now stuff’ is done by the research team. Each*

team is not stretched across. It has its own management issues because now it is no longer a fast moving type team, it's now spread across our organization. It has a lot more power but a lot less agility and what you see is brilliant new capabilities. At the same time [there are] some annoying bugs and performance issues and challenges. (Google, P17)

4.5.5 Goal setting and incentives

In the literature on innovation, goal setting and incentives for the internal organization are linked to the active cultivation of ideas. A key outcome of goal setting is to break down insularity and engage employees in the overall vision of the company. Achievement of these goals is often linked to extrinsic (monetary) and intrinsic rewards, such as recognition and corporate support. Goal setting and development are also essential links between the levels of the organization. The goal-setting process for each employee is linked to the organizational structure.

In these interviews, many different views of both goal setting and incentives were presented. Some aligned with traditional goal setting structures that included performance reviews and bonuses linked to measurable performance and results. Others suggested that while this process existed, it was quite loose and not effective. Within the companies, similar views existed.

The cascading of goals, both upwards and downwards, is suggested and recognized as central to effective strategy. The speed of delivery and product release cycles impacts goals at some levels; in other cases, goal attainment is impacted by structures for engagement and outcome measurements with management.

It is kind of like a bottom-up process, the input from the teams. It's basically just a strategy for each of the teams to provide input and then that is reviewed and kind of messaged by the senior leadership, and they all agree on that and it gets sent back down afterwards for each of the groups to make their own. (Motorola, P21)

> *We keep it a little bit looser because traditionally we were spinning so fast it was hard to keep track of … three (3) or four (4) months to have a goal when you are going to go from one release cycle to another release cycle and you are going to switch around dramatically what you are doing. It's hard to keep those things stable but the higher organization has a goal. It might be … I belong to the low-level platform of [the] Android organization and we have goals, we have to support this for four (4) months,that kind of thing. (Google, P15)*

Another participant notes a bigger picture of goal setting and expectations, tying it to taking risks, learning lessons and team evaluation:

> *I think the expectation is that at the end of the quarter you aren't going to make all of the goals because you did set them so aggressively. I think as long as there is learning, like sure, some goals you will get closer to, some goals you will not actually get close to at all. What's really important… the team will end up… evaluating that and figuring out lessons learned. I think that is really what all of us want to have end up. (Google, P11)*

Both goal setting and the meeting of subsequent milestones are drivers for success, again timed to specific product development:

> *Ultimately…they want to develop the best product that they can - up to their standards and within the scheduled time frame that they have come up with. That is very important to them - they create these milestones, many milestones, and every department is adhering to those milestones, so they are very well organized. (Palm, P23)*

The relationship with the manager is evident. One interviewee referenced his goal setting conversation with the manager, noting the link between department goals, personal capabilities, and success:

> *It's a combination of both, because based on what you have done in the past, they get an idea of what you are capable of. They have goals that have been set by their senior manager for them, it's their job to achieve those goals and then you're one (1) of the ways that they achieve it. At the same time…it's conversation…if there is certain things that I think that we can do better at the same time, or I can do better at the same time, then you say that to them and it kind of becomes a combination of both. (Apple, P3)*

In “top-down” organizations, the interviewees presented different views of the goal setting process. Goals were “predominantly cascaded down” from the ‘executive ranks’ with little evidence of a reverse cycle or employee input. Great emphasis was not placed on this process as a learning or development opportunity; instead, it became “predominately it’s a lot of cutting and pasting of the day-to-day operations as well, some individual goals and objectives.”

Within the same company, one interviewee suggested the absence of goal setting, in comparison to his previous work experiences.

> *There wasn’t a goal-setting process. I came into here having worked at another company which had a very refined, cascaded goal structure so I made many attempts to implement that cascaded goal structure and next step level and we actually did it some. The surrounding organization wasn’t respectful of annual goal[s] so it was very difficult to get kind of wholehearted commitment from everybody to do it. It wason one hand, a product driven company and on the other hand it was still a sales driven organization.There wasn’t a disciplined goal processing company while I was there. (Blackberry, P8)*

In contrast, within a more successful setting, a concrete goal-setting process is referred to as a road map for product development and results:

> *In fact, goal setting works in a good way, it grows product enough in a sense. You have…a very broad road map and then all the product themes will bring up their own OKR (Objectives and Key Results) and they all kind of overlap a bit and they are put together in actual concrete goals [which] are set for the entire division based on these. (Google, P11)*

Without a clearly defined goal process, the vision that links indiviudal goals, the broader strategy, and the corporate vision, is unclear – or as one interviewee suggested, “something was missing”. This was particularly evident in relation to incentives and performance evaluation.

> *The vision was good, it was all good - the questions come to…first…what's your incentives, why would you do it? The second thing is how well you are able to implement it. Both parts were missing. (Blackberry, P10)*

While incentives were part of the interview discussion, none of the participants complained about their compensation. Specific monetary rewards or bonuses were not discussed while some participants did address the link between performance evaluations and bonus structures. Some referred specifically to “spot bonuses” for project work, such as stock priorities, reward structures, and the ability to nominate colleagues. More evident in this element of the interview, however, was the link between employee satisfaction, company performance, and intrinsic rewards. As noted in the discussion on cultural elements, the key incentives for most of the interviewees were intrinsic and related to pride, public recognition, community contribution, and corporate success. Promotion was linked to trust and the ability to work with a team.

> *I have a lot of incentives to choose the right products and make the right decisions, not only for myself but also for the people around me simply because if I am successful, they are successful. If I am not successful over time, I will get weeded out because people won't trust my decisions as well*

anymore -because theydon't get them promoted. (Google, P18)

I think in terms of incentives we talk about this a lot internally and I think it's really a matter of how big an impact they can make. I think a lot of the products that we work on these days are kind of being used by close to a billion users and I think that is a big enough incentive that actually drives a lot of people. I think our next sort of goals are to get to the next billion users and I think that is such a large an impact. (Google, P11)

Likewise, and linked to integration, is the ability to move or to be promoted to highly recognized teams, such as engineering or product development:

Product teams are actually highly, very highly regarded, so if you are working on a blockbuster product, I think there is definitely a lot of public recognition within Google and outside in the industry. I think there are a number of instances for all the products that have really big impact. (I know) all of the product people really well and I would suspect that that would make a big incentive for people to work on it. (Google, P17)

I wouldn't say agenda, it's like a pride kind of thing, come make the best - and when it was down to the engineers at that level, it motivates them as well, so they work all the more hard. (Blackberry, P10)

They are incentivized to do just cool stuff.I know that engineers who work on really ground breaking things here are the ones that are the most respected. So I think when they go in and present their work, I think that it's always better if they have really great and ground breaking and new things that are going to move the marketplace forward. I think on the engineering side… engineers have a little bit more power to just create. (Google, P12)

Central to the concept of intrinsic rewards is the value placed on the employees and the freedom that they have to contribute, which in turn supports corporate growth:

> *I guess there is definitely an incentive … we are given the freedom to do really big things…to go and to make decision[s], or to make suggestions like – "Hey, I think we should build this product, get this product out," or "I think it makes sense for our brands to be two different brands and here is why." I guess we are given the freedom to do that but then I definitely think that [is] sort of your growth at the company. (Google, P16)*

Again, all of the participants who shared in this discussion did not focus on the financial reward systems. Rather, the focus on both goals and incentives stemmed from the culture of innovation, personal motivation, and a desire for success - to create the best user experience and to be a top performer.

> *At the end of the day, we all have our own individual ratings…and that sort of monetarily feeds our motivation or not. t I think for most people it is the fact that we are in this culture and this environment where we want to be innovative and aggressive and also just do things that are positive - and I think that is just the underlying theme and everyone just goes out and get[s] it. (Google, P14)*

4.5 Leadership

> *Leadership is the critical thing to create a culture for innovation. That is the most important thing. The culture here is distinctly different from any company I worked for and it starts from the top down. So it starts when you have a company-wide meeting. Any employee can ask any question, only limited by time… if there is sixty thousand people and there are only so many leaders. If there is a meeting with leadership, anyone is allowed to question and there is no*

> *constraint on [an] individual employee's ability to speak freely and openly. (Google, P13)*

How does leadership impact these innovation cultures? What is the role of formal leadership in fostering the innovation capacity of employees and encouraging risks, interdepartmental collaboration, and structures to enhance new product development? How are the values of trust, creativity, and teamwork cascaded through the organization?

The intent of these interviews was not solely to focus on the senior leadership or founders of each of the organizations. While they were referenced, the broader scope of this research was to focus on the vision, strategy, and actions of leadership. These interviews focused on the experiences and impact felt by the employees. We spoke about communication, collaboration, vision, and engagement along with strategy and the role of competition. What is evident is that effective leaders in successful firms create a sense of ownership and engagement, driving change and innovation by building trust, respect, and energy in their organizations. Strong leaders seek differentiation and are market-driven, thus creating a culture that challenges, guides, and supports people. They draw on the collective knowledge and expertise of their employees, energizing them and building their confidence to create radical innovation.

4.5.1 Visionary

> *Oh yeah, he is always thinking … like it's Larry Page, I don't have to tell you… always thinking ahead, where is it going. To use a hockey analogy - Wayne Gretzky always knew where the puck was going to be, not where it was. He knew Google was going to be huge. (Google, P13)*

Across all organizations, the participants echoed the central role of senior leadership, especially founders, in creating and leading a vision. The findings suggest that good leadership acknowledges and motivates employees across the organization and offers a broad view of the interconnectedness of their work while remaining at a "high level". This term, "high level," was used frequently by the participants - perhaps to

denote the difference between the defined leadership roles and their own work in the organization.

> *They have higher visibility into how we intend to solve the challenges and problems that we aligned on being the problems and challenges that we want to work on in this timeframe. (Google, P18)*

> *Product managers need to be visionary and very focused and care about details but still remain high level, all at the same time. (Google, P14)*

While “high level” leadership is referenced, this does not imply that the senior leader is disengaged from the employees. The ability to stay connected and seek input for new ideas is coupled with this vision. Value is placed on the team and the individual. To lead innovation, the leader engages frequently and deliberately.

> *Recently in a project that I have been working on…there was essentially a gathering at a remote office ... I couldn't wait to have some Facetime with senior people, and get to know the people that have been around for longer and know more of the vision and the direction of the team. So I have worked with them in person and since thenit's as easy as just reaching out to senior people…, just a sentence or two about the project you are working on and [a] reason why they are relevant to the discussion, maybe a few topics that you want to talk about, and just throwing something on the calendar. Very often they will add people just out of good will and… other senior people [who] know the projects that are going on, especially if they feel it is relevant to what they are working on. Then, that's that and a week later you meet with them and you talk about it, you ask questions, they ask you questions - so it's kind of very open. (Google, P15)*

None of the participants implied that leadership vision was lacking. All acknowledged the visionary role of the leader as a founder in the initial success of their companies.

> *Blackberry was successful because those guys were the two smartest, most capable, most knowledgeable, most thoughtful players in the industry. There is no other explanation, they made that company successful. Mike and Jim personally crushed the players in the smartphone industry and they were just smart, better, faster personally - and they just trained their organization and executed to their standards. (Blackberry, P8)*

Again, when the organization is no longer in first place and the need for change is evident, the challenges lie in how vision is adjusted and communicated.As the firms grew, and competition emerged, leadership needed to adjust its actions and behaviours accordingly.

> *Now at the end, once they were successful, they attracted the attention of guys out here in Silicon Valley who were brought in to play a little set of competitive assets and strategies that Mike and Jim had never seen before, and they didn't know how to react to [it], and they didn't respond effectively to it. (Blackberry, P8)*

> *So the leadership had a vision, [and] how did they communicate it downstream from leader to me? Very poorly… and you would also question their vision and you would also question the change of direction every few months. (Blackberry, P10)*

Thus, to remain successful and innovative, it is essential that leaders both create and communicate a vision that inspires engagement, action, and ultimately, results. Creating this vision requires the leadership to respond to change, to think differently and explore new possibilities. Often, the powerful leader who remains committed to a vision that is stagnant or self-centered runs the risk of failure.

> *The strength of the company was [that] Mike got everyone to do what he wanted them to do, but the weakness of the company was that everybody did what he wanted them to do.*

What they did not do correctly was bring it soon enough in the market - they were too late - and when they actually did, they had very little on it. It was just too little, and that just sank the ship. He wanted to build stuff just to up his power at negotiating with other companies, including building things, dedicating resources to it, and it [didn't] matter if it was for the customers or not. (Blackberry, P8)

I think in terms of failure, they have to get past that. They fall off because the company becomes more political - who is in charge. Then they will pretty much control how they deal with the issue. For example,if some of the things fail, or if the manager or even higher up is in the company for a long time and they have a lot of power, they will not see that as a barrier and just avoid the issue on it. (Motorola, P20)

4.5.2 Collaborative

It's kind of a weird synergy thing that happens so it's kind of cool. (Google, P15)

As suggested in previous themes, the collaboration and integration of teams is central to radical innovation. The vision and support of senior leadership is required to bring this about. Participants acknowledge the role of leaders in decision making and collaboration as well as the leader's expectations for them:

Google is quite collaborative so I wouldn't equate a product manager like a CEO, I would call it more like a quarterback or a coordinator or the glue that holds it all together. (Google, P14)

You are a cross-functional leader for all of them. I kind of call it the quarterback of the launch. (Palm, P24)

I feel here leadership expects more of us to make the decisions ourselves among the working group - it's good and bad. I think the role of leadership, in general, is to be strategic

> *and to make decisions, so they need to understand…[more]than anyone else and have a vision of what that means and how they would like to get there. Then they need to make the hard decisions. Where the teams should be able to do ninety percent of the things… ten percent where they cannot come to consensus, that is where leadership makes a call based on the information they have. (Google P19)*

Accessibility to the senior leadership team is respected, along with its visible interest in the work. Some participants reference planned opportunities for interaction with the senior team.

> *We have that freedom to go out and pitch product ideas and it makes it a little more interesting because you can potentially go to leadership and say, "Hey Hiroshi." Hiroshi is actually VP of Android. We run into Hiroshi all the time and we'll talk to him… what we are working on … and he does show interest in everything people are working on. There is definitely a lot of movement and Hiroshi and someone else from the product side is kind of available. We also have some of these meetings where they are very informative, like weekly or every other week.You are going to meet with leadership and it is almost like a TGIF, Thank God it's Friday, sort of a thing, where you just hang out and that's another opportunity to kind of mix with lots of different people, including the leadership. (Google, P11)*

Participants suggested that this type of collaboration and engagement allows them to align their own work more strongly with the leadership vision and strategy.

> *The interactions are very strange and very much based on what you are doing and the interest of who in the organization - all the way to the top - is interested in that area. One of the things I find almost remarkable is how things that I am doing -*

> *I can directly relate to what Larry has been complaining about or wanting to do, or changing how it's met. (Google, P15)*

The data suggests that a leader who is collaborative and engaged with employees creates an environment that strongly supports innovation while ensuring that the daily work of the organization is aligned with its vision. While all of the participants identify the original vision of their founders as central to their growth, the actions and attitudes of the leader need to become more visionary as the organization seeks to sustain success. Leaders also have to become more focused, at a high level, on new markets and supporting the high level of talent with flexibility and trust.

> *The role of leadership, senior leadership as you go higher and higher, is to ensure that people are more or less likely to have the right problems on their radar and then folks have a lot of flexibility in how to solve these., The boundaries are set… of what you are to solve but there is no prescription in terms of how you solve them. (Google, P18)*

4.5.3 A market-focus

Although it is evident to the employees that their leaders pay attention to the competition, it is not the main driver for radical innovation. Instead, a relentless customer-market orientation is suggested. Innovation leadersfocus on creating and capturing new markets, not existing ones. As one employee states:

> *Your competition is just one data point among many, and it is an important data point…[but] it is not the most important data point. The user -understanding the user - is the most important data point of all. (Google, P17)*

Conversely, an unsuccessful organization tends to discuss current customer status only, without a visionary and new market lens - perhaps demonstrating a sense of complacency and arrogance.

> *I had an awful lot of interaction with the senior leadership team…not where you were going …it wasn't about the vision*

> *and goals, it was really more about the customer status. (Blackberry, P7)*

While knowledge of the competition is essential, timing and a desire to differentiate for the customer is at the core of disruptive leadership, or as stated by a participant, *"at the end of the day, it sort of a race to the thought".* It is this race that drives innovation and the relentless focus of leaders. Their focus is not on building competitive advantages but making the competition irrelevant.

> *One of the trendsetters we see now is it's sort of a race, because now everyone has the same software, so it's like who can produce the same hardware? Certainly people can build crazy technologies and build very expensive lines but then at the end of the day… software is not differentiated and hardware is not differentiated - it is just a race to the thought. (Google, P14)*

The senior leadership's vision for innovation translates into the actions of the employees across divisions, as they unite to create new market opportunities - not products that are 'better' than the competition:

> *I think the senior leadership realized that the existing product line was not competitive with some of the newer devices that were coming out and so at the top, there was a desire to introduce a very disruptive product in the market that would be more competitive. There were high-level visions around what that experience should look like, but from a bottoms-up perspective - the details in terms of what the architecture of that OS would look like, how it would deliver against the specific use cases that were being defined. All of that came from the product team. So [a] very high-level vision in terms of "Hey, we want something that is cool, that is disruptive, that is really going to create a new market opportunity for us." The product teams were really then given the reins to figure out what that actually translates into. (Palm, P23)*

The challenge to do this arises when the senior leadership fails to accept change and fails to create opportunities that will differentiate them within the market. The data suggests that effective leadership for radical innovation requires one to be both externally aware and customer-centric, yet with a future market focus. A narrow and complacent lens on meeting the needs of the current customer is both reactive and inhibits growth, as evidenced in these interviews. Effective leaders think differently and seek bold opportunities for disruption while engaging the talent around them. This boldness must be coupled with a degree of humility and humanness since arrogance may align with failure.

> *The leadership needs to be away from arrogance, they can't go into this denial mode of saying the world is not moving forward and we are still the best. This denial mode in leadership is actually top down, [and] could hit the company really, really bad. (Blackberry, P10)*

4.5.4 Transformational mindset

As suggested by Wind and Rhodes (2017), radical innovation requires challenging and transforming the mental models, or mindsets, of the firm that are obstacles to innovation. In this paradigm, leaders adopt a philosophy of adaptive experimentation, giving permission for bold actions and recognizing the need to fail fast and often, providing security for failure.

> *I think that is definitely something that's part of the vision that top management has, that you should fail fast and fail often and I think that is the reason why it kind of permeates everything. They have been preaching that. (Google, P15)*

This mindset requires a leader to create a feeling of openness and to align the organizational structure to optimize the development of new capabilities via an integrated approach across the firm. From the employee perspective, this leadership mindset promotes a culture of innovation:

> *In another company I would have had to go through all this bureaucratic innovation sanity checking to get even started.*

> *The culture is totally different here, it's amazing...it's a culture thing from the bottom up and the leadership reinforces it. (Google, P17)*

The participants recognize that a leader's mindset and actions define innovation. They suggest that this type of leader is strategic, data-focused and successful. In essence, the actions and mindset of the leader define the success of the company.

> *So again, when the person says what makes it innovative, we look at the leadership and we can tell a lot. What did that accomplish before? What money have [they] checked? What did they do with those plans? Did they succeed? What kind of quality? Who did they plan with? What are some of the customers' mentality? (Motorola, P20)*

Likewise, participants align leadership with failure and complacency, suggesting the role of the leader in firm performance.

> *It is more important to spend time with the leadership. Are they innovative? And then always agree not to move out or not, because…they become complacent. So the lesson is that they should not be complacent and do really well with this order. What else can I do better, right? Is it the make or in terms of the quality of the stuff, or also in terms of small things like camera, light?I think that the too late thing for Motorola is the leadership, they have become complacent. So they think we have all the good products but we cannot depend on it to last forever. (Motorola, P20)*

Another participant summed it up well, in the comparison between new and old leadership at the firm as it attempts to reposition itself for success:

> *It really comes down to having … we call it an SLT, a strong leadership team. I think a good example here at Motorola is that we had a CEO before with a certain management style and I think it might have rubbed a few folks the wrong way,*

> *not as open, not as … smart guy, helping drive the strategy but maybe not relatable to the organization. He left the company last year. The head of product management, RA, came in - it was the right move, having a great guy become the CEO.We all love RA, we play basketball like once a week, he is a great guy. That is more of a personal thing but he came in with a philosophy: "I understood what my predecessors have done wrong, we are going to make it a more open organization. So I am going to have a town hall every couple of months." We have one today, it's like, "Ask me anything, I don't care." …more communication to the employees, really kind of making sure he is always keeping people focused, keeping morale up, communicating on a regular basis, honesty - a huge part of it, he won't just go by what the talk track is, he will answer the question with a lot of thought. [He is] not necessarily always in motion, just a very rational guy and they are very rare in the industry, so it is more of a top-down philosophy. (Motorola, P21)*

Without a transformational mindset for leadership, the possibility of radical innovation, of surpassing the competition, is null -as one participant eloquently stated:

> *Innovation is killed all the time because people don't want to change their business model. (Google, P13)*

4.6 Section summary

Section One provided an overview of the key themes found in the data related to a culture of innovation. Table 4.1 outlines these key themes along with related sub-themes. The data presented suggests that there are central factors in a culture of innovation that contributes to their success. Likewise, these findings suggest that there are systematic differences between the culture of the firms that deliver transformative innovations versus those that do not.

Table 4.1: Themes and subthemes

	Successful	Unsuccessful
Organizational Culture		
• A sense of trust and risk-taking	Evident	While part of the initial culture, a sense of blame and distrust emerged, along with complacency and arrogance.
• Culture, talent, and expectations	High level of talent, pride, and expectations. Culture is conducive and built on respect.	
• Intensity	Evident	Evident
• Openness	Evident and often coupled with secretiveness	Somewhat evident but more inclined to work in silos with minimal engagement of whole team in decision making.
Learning Orientation and Attitude towards Failure		
• Adaptive Experimentation	Failure and risk are accepted and expected. Decision making is based on data and creativity is nurtured through teams and high expectations for contributions. Alternate opinions are valued.	Characterized by reactive behaviours and blame. Risk taking and failure are not supported. Growth is inhibited since talent is not nurtured nor alternate views supported.
• Risk Attitudes		
• Security for Failure		
Organizational Structure		
• Communication and Problem Solving	Established structures are evident.	Weak structures, Top-Down and reactive.
• Integration and Team Structures	Integration occurs across divisions with opportunities for interdepartmental moves.	Integration occurs across divisions with interdepartmental moves somewhat supported.
• Hierarchy vs. Adhocracy	Adhocratic, market-driven structures are evident.	Top-down hierarchical structures are evident.

• Goal Setting and Initiatives	Clearly aligned with strategy and linked to incentives.	Loose structures, minimal communication and haphazard approach to incentives.
Leadership		
• Visionary	Evident	Evident at the beginning but is not consistently communicated as success wanes and competition increases.
• Collaborative	Evident	Evident at the beginning. Challenges arise when competition increases.
• A New Market Focus	Evident	Customer-centric, reactive, complacent, arrogant.
• Transformational Mindset	Evident	Reactive, Top-Down

The next section of this chapter will explore, in more depth, four organizations in relation to these findings - Google, Apple, Palm, and Blackberry. These companies were chosen for this more detailed analysis since Palm and Blackberry were the most successful early entrants while Apple and Google are the most successful late entrants.

Section Two - Between-case comparisons

4.7 Section overview

In this section, four organizations will be discussed in relation to the findings. While the twenty-six interviews conducted spanned a variety of companies in the Smartphone platform industry, I have chosen to explore the most successful early and late entries in the industry, namely, Apple, Blackberry, Google and Palm. Success in this work has been defined as an organization's ability to maintain and grow market share, something that clearly differentiates these four companies in comparison to one another. This was the central driver behind the decision to select these four companies for detailed analysis in order to really understand what differences, if any, exist between those organizations that can maintain success and others who experience it but are ultimately unable to maintain it.

The interviews regarding these companies will provide points of comparison relative to the key themes of organizational culture, organizational structure learning orientation and attitude towards failure, and leadership along with central differences that contribute to their success or failure. As well, using the findings, a cross-comparison will be provided between the companies to identify the similarities and differences relative to their success.

4.8 Google

Google's vision for success is quite simple, '*to provide access to the world's information in one click'.* Google is almost synonymously perceived with innovation in the technology world. Google maintains its firm and its position as one of the top innovative companies in the world because of its culture (BCG, 2017), adopting an approach that is very indicative of a Prospector Strategy (Miles and Snow, 1978). Employees are given the freedom to come up with new ideas and are equipped with the necessary resources. This culture led to the creation of Gmail as part of employees' personal projects and was later scaled to the world's largest email service. It comes as no surprise then that Larry Page, the founder, had envisioned the disruption in the Smartphone industry well in advance, and anticipated the role of smartphones. Google is also complex in the sense that it develops the most used smartphone platform (Operating System - OS), Android, that caters to hundreds of different clients.

4.8.1 Organizational culture

Google employees, called "Googlers", use the word 'googlie' for being respectful, inclusive, and collaborative. There is a strong family-like culture and people are trusting of one another. People tend to create an environment of trust based on their credibility and role in the organization. According to the employees, they have the freedom to work on their own terms and do as they deem fit.

This sense of trust translates to a consensus culture with a mutual commitment to finding the best idea.

> *You decided if you are innovating up front…"alright, we are going to do this idea where you get a reward for this, "What a*

stupid idea…", now that is word that is never used in Google, we don't use the "s" word. (Google, P12)

Coordinating everything get[ting] everyone cognizant and look[ing] in one direction, is really, really hard. Not only is it a challenge, but it's also a huge opportunity as well. (Google, P13)

In another company I would have had to go through all this bureaucratic innovation sanity checking to get even started. The culture is totally different here, it's amazing… it's a culture thing from the bottom up and the leadership reinforces it. (Google, P17)

Another feature of Google's culture is the inclusion of its partners, rather than trying to control and command the features of Android.

Maybe we are wrong about something, we may think that [it] is a terrible idea and it actually might be a brilliant idea so we have got to find ways where we get in the way of certain aspects of the device and let partners compete and be innovative. [We] see what sticks with users and resonates while still kind of providing the experience that we think is more consistent and get[s] better presentation…that is what we are trying to do right now. (Google, P13)

4.8.2 Learning orientation and attitude towards failure

You find success at Google by taking those chances and taking those risks and putting those ideas out there. (Google, P12)

At Google, failure is expected to occur and viewed as something that could happen to anyone. Upon failure, employees can write a post-mortem report outlining the reason for failure and how it can be avoided in the future. Employees can be rewarded for good post-mortem reports. As one participant noted:

> *Failure is expected as part of the culture…it is an 'understand not blame' culture (Google, P15)*

Experimentation is a part of Google's culture and good ideas that comply with guidelines are encouraged.

> *Sometimes a lot of them are pretty terrible ideas…all you need is one good idea and fifty bad ones - forward progress. (Google, P16)*

Ideas and new possibilities are always encouraged and employees are trained not to shun idea generation without paying enough attention to an individual's viewpoint, while being cognizant of bias:

> *We are constantly trying to train people to be self-aware when they are doing that…if you are shutting down someone during a conversation, if you have some unconscious bias that you do not realize. (Google, P13)*

A well-recognized feature of Google's innovation process is the twenty percent project wherein engineers are encouraged to dedicate 20% of their time to pilot a project other than their work:

> *That is how a lot of innovation has actually happened, through the twenty percent. Gmail was started as a twenty (20) percent project by one of the engineers who said "Hey we should have a better web-based client." (P14, Google)*

According to the participants, Google keeps a close eye at the competition and their products but does not blatantly copy the competition. In the case of mobile payment, for example, Google Wallet had a tough time launching because *"roadblocks were thrown down".* (Google, P13) Now that Apple Pay has been launched successfully, Google Wallet is now being brought back into the competition.

4.8.3 Organizational structure

Cross-functional integration

Participants suggest that Google teams are just big enough to focus on a particular area and be co-located. Teams focus on their own products and use outside resources on an as-needed basis. A product manager may manage multiple products. They do not operate in silos and draw on expertise as needed. As one engineer noted,

> *In my role, I use all the partners for everywhere so whether it's (outside partners listed) - I walked today with them. I meet with them all and it also starts at that phase. So sometimes I will go with business development to kick off a discussion, to meet with partners to say "Hey we might be interested in building a product." They say, "Okay, tell us what you want to do, we will guide the process." Once we reach a plan, we go "Here is the product we want to build, there is the innovation phase".(Google, P13)*

Drawing on previous work experience, one participant noted the positive difference in integration at Google:

> *Google typically doesn't have project managers for that reason because typically the tech lead and the engineering manager is on it, and engineers are motivated, and they will just crank it out… I spent two years at Yahoo before and it was totally different. You just come to this environment (Google) and you don't need a project manager and things just get done. (P14, Google)*

Personal movement

Movement in Google is encouraged and employees are also proactive in taking initiatives to try new spaces.

> *People jump around a lot, and you don't want people to jump around too fast, but typically at least one year… minimal one*

in your current team, it's not uncommon to jump around. (Google, P13)

Goal setting and incentives

My number 1 motivation is to provide the best user experience. (Google, P16)

Google uses bonuses, stock options, and award titles to reward employees. However, financial reward is not the main driver of employee motivation: *"The incentive system does not tie specific tasks to specific rewards because as soon as you do that, priorities change" (Google, P13)*

A common message from the Google participants is the power of intrinsic rewards and internal motivation. They did not feel the need to discuss salary and acknowledged bonus/reward structures thus: "*Yeah, sure there are different rewards so if you do something that goes above and beyond to help someone else, you get pure bonus" (Google, P12)*

Beyond these extrinsic performance rewards is the intrinsic power of impact. The participants recognize the power of their work on a global scale:

I think it's really a matter of how big an impact it can make … I think our next sort of goals are to get to the next billion users. I think that is such a large impact that I think all of us are extremely, extremely motivated to make this into an even bigger success. (Google, P11)

4.8.3 Leadership

Google has a very flat, adhocratic corporate structure where any employee can approach and talk to other employees at Google including top leadership.

The culture here starts from the top down. (Google, P17)

The idea generation is not top down. The management is receptive to ideas and "allows lots of innovation experimentation":

The management serves more as a facilitator of resources and the technical talent in Google is encouraged to get the

> *work done in their way. Managers ensure that the work done by engineers is done without any problem. Some teams are very political to the company and some are not. There are top-down directions, [such as] "Okay this needs to be done", but in general management is supposed to be subservient management. (Google, P13)*

The role of leadership is also different in different departments.

> *Most of the decision making comes from engineering at Android … not so much at Google, but it is at Android. (Google, P11)*

Participants state that there are not a lot of "hierarchical goals" (P12, Google) and while different levels of leadership exist, frequent interactions occur related to product development and ideation, creating a "seamless process" where all employee input is valued.

4.9 Apple

4.9.1 Organizational culture

The public vision statement of Apple is strongly reflected in the cultural factors identified by the participants:

> *"We believe that we are on the face of the earth to make great products and that's not changing. We are constantly focusing on innovating. We believe in the simple, not the complex. We believe that we need to own and control the primary technologies behind the products that we make, and participate only in markets where we can make a significant contribution. We believe in saying no to thousands of projects, so that we can really focus on the few that are truly important and meaningful to us. We believe in deep collaboration and cross-pollination of our groups, which allow us to innovate in a way that others cannot. And frankly, we don't settle for*

anything less than excellence in every group in the company, and we have the self-honesty to admit when we're wrong and the courage to change. And I think regardless of who is in what job those values are so embedded in this company that Apple will do extremely well." Tim Cook, CEO[1]

A culture of collaboration, innovation, integration, honesty, and excellence are evidenced in these interviews and clearly aligned with a Prospector approach (Miles & Snow, 1978). High performing teams need to challenge each other with a central focus on being the best. Talent is nurtured and a strong sense of connection to the Apple brand is a key motivator for excellence.

Trust

> *That is the first thing - everybody trusts. So if you have been selected, you are trustworthy. You are good enough. I mean if you are selected, you are good enough. That's it, nobody … I don't think anybody doubts you. (Apple, P5)*
>
> *It's a culture of trust, you know, people, go to bat for each other, especially within the department because we have our own pneumatics that we want to attain as a department itself. Everyone is working to help each other and if support is required there is always someone to help you out. (P2, Apple)*
>
> *I trust that my manager will put the right person to take care of that. (Apple, P1)*

It is evident from the interviews that there is an inherent trust present in employees. This helps in maintaining the secrecy between the departments while creating a team environment. When a department assigns a task to another department, there is an automatic trust that the other department will deliver the task in a timely manner with

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[1] http://panmore.com/apple-mission-statement-vision-statement

utmost quality. This high level of trust between teams increases the probability of bringing innovation to a company.

4.9.2 Learning orientation and attitude towards failure

> *I would not say that failure is taken very badly, the only thing is they will always make sure you have a backup plan. So while I was doing all of this stuff, I had the team to do the backup part, it comes onto me. (Apple, P5)*
>
> *At some point, something is wrong if it is consistently failing but then all of our failures are pretty okay. (Apple, P6)*
>
> *I wouldn't say there is an environment where you shouldn't take risks because if you fail, it looks bad. It's not so much like that, but it is always - if you are going to take those risks, make sure they are calculated risks. If it doesn't go the way [it is] suppose[d] to, you can still do what you would have done had you not taken that risk. (Apple, P3)*

The risk-taking and acceptance of failure is different at Apple in comparison to Google. I learned from the interviews that managers take a lot of precaution before assigning a new project. While having a backup plan is always a good idea, they think it will consume extra resources that could have been used to work on a new project. New ideas are encouraged, but they come with a word of caution to adhere to timelines and ensure the release is not delayed. Hence, I say Apple's risk tolerance is medium to high.

4.9.3 Organizational structure

Cross-functional integration

> *Not that they don't come, but then there are people who resolve them. There are ways, there are channels, so it is structured. You know how the cross-departmental thing is structured, it is very secretive in nature so there are only signature people who know what to say. (Apple, P5)*

> *The organization is very flat and they are different groups…and since it is so flat, between me and the CEO there are four layers of management. (Apple, P4)*

> *The culture at Apple is very much group oriented, so there are a lot and a lot of meetings, multi-functional meetings where people are always working together and trying to pick each other's brains to come up with the best idea. (Apple, P2)*

From these interviewees, I can gauge that the organizational structure in Apple is very flat and various groups work together in harmony to create value. Although there was a lot of mention about the secrecy inherent in the company, there was always an upper manager facilitating the communication between different working teams. I suggest that the formal integration is so high as a result of the well thought out organizational structure that on the one hand, keeps the secrecy in between the teams, and on the other hand coordinates between them to maintain an integrative environment. This supports other research that suggests that high formal integration helps bring innovation into a company.

Personal movement

> *Even right now I can look for a job inside Apple and say to my manager I am bored and I want to try some other thing. (Apple, P5)*

> *It's easier, definitely easier to move from one team to another than it is to…come from the outside, because if they know that you are capable of doing something there and those people have worked with you, they will be much more receptive. If you have an interest, they won't tell you not to [move], but they don't actively say [that] if you feel like you don't really like your team, go to this person. (Apple, P3)*

At Apple, personal movement between different departments is not well supported. With the stringent regulations inside the company and projects always running on strict timelines, it is difficult for an employee to switch teams.

Goals, incentives, and rewards

> *Your bonus is kind of based on what goals you set for yourself in the beginning, and then after you set those goals. (Apple, P3)*
>
> *I believe the kind of people who are there at Apple are passionate to work for Apple… other than looking for rewards. When it comes to competition,, they do take care of it all pretty well, so nobody actually thinks that they will get something extra. Again, the competitive leader is not there, the competitive nature is there, but there is no comparison… like "I have to do something because the other guys do". (Apple, P5)*

At Apple, the greatest incentive employees have is the pride of being associated with such a brand. Apple does not have a formal reward or incentives program, but empowering each employee to suggest and listen to an idea is the key motivator. Occasionally verbal appreciation is given in meetings, but it's not a motivator. These examples infer that incentives and rewards have a medium influence on the culture of innovation at Apple.

4.9.4 Leadership

> *We do align to a vision but at the same time it's so secretive you don't know what you are doing. Vision is inherent -say somebody comes and talks to me - it's pretty much palatable what people want out of you, what your manager wants out of you. (Apple, P5)*
>
> *If you asked me to describe the culture professionally in one word, I would say it is very secretive, because part of the allure of it is, "What are they going to do? What are they going to do this time?" (Apple, P3)*

> *I mean if you have an idea and it makes sense for what you are doing, then they will always listen - I mean they are not like hierarchy and stuff like that... I mean they always welcome innovation. Apple has a thing to call their managers "leaders" - there is a reason for that. They don't give them the title of manager, they give them titles of leaders because they want to instill a sense of ownership [in] them and responsibility, as well as a focus on ensuring that they develop not only themselves but the people around them. (Apple, P3)*

I conclude that even with all the secrecy between departments in Apple, each employee shares Apple's vision to be the most customer-centric company in the world. This is made possible by the visionary leaders, who make sure the vision statement is communicated clearly through upper management. Leaders at Apple are innovative in nature. The reason for this is that Apple picks candidates who are already inclined towards bringing innovation to society. They go on to become innovative leaders in the future. This supports my hypothesis that a company with innovative leaders will be more successful in creating new products and bringing them to market, and hence more likely to be a successful company.

4.10 Blackberry

BlackBerry was regarded as the handset pioneer, and it dominated the smartphone industry with a focus on innovation., Its early days were congruent with a Prospector Strategy (Miles and Snow, 1978). While its current vision statement states, "A connected world, in which you are safe and your data is yours", earlier statements are not known. The email and Blackberry Messenger (BBM) had put BlackBerry in the frontlines, with no competitor able to replicate the same technologies at that time. Blackberry became synonymous with office phones and captured the young customer segment with the BBM. However, with the advent of Apple, BlackBerry lost the top position and became obsolete, digressing its organizational strategy from a Prospector to a Defender, and ultimately becoming a Reactor according to the typology of Miles and Snow (1978). I focused on understanding the reasons behind

the downfall of BlackBerry, even at the time that it was the industry leader and had the resources and an extremely talented employee pool working for it . From my analysis of the interviews, the participants suggest that it was the short-sightedness of the leadership, a high level of customer-centricity, disregard of competition, and low integration between PDCs (product development centers) that led to the collapse of its smartphone. It is also evident from the analysis that BlackBerry deviated from a Prospector strategy, and issues were not apparent in the beginning and during its period of success. In fact, Balckberry's culture and approach mirrored both Apple and Google before its digression.

4.10.1 Organizational culture

> *My role was actually important and I would feel extremely proud of working for Blackberry. (Blackberry, P10)*

A sense of pride was evident in the more successful era at Blackberry, which stemmed from the knowledge that the product was successful and that the team was talented.

> *We had the best team in the world. (Eventually) people left us to go to Nokia, Motorola, BOSE, Apple, Messon, Microsoft - but before that, this was the best team and the phone which we made was really good. I wouldn't say agenda, it's like [a] pride kind of thing, come make the best. When it was down to the engineers at that level, it motivates them as well, so they work all the more hard. (Blackberry, P10)*

They positioned themselves to be "at least two steps ahead of what the competition is doing" and identified employees as "extremely talented and motivated people".

> *"Nobody was ever lazy" (Blackberry, P9).*

Coupled with talent and pride, a sense of blame and distrust was evident when challenges arose. One participant noted a lack of appreciation for the work that was done across teams:

> *They had the hardest job in the company and nobody ever appreciated them. They were the team that everybody*

> *thank[ed] when things went well and got all the blame when things went bad, and they were the ones at the end of the line. (Blackberry, P9)*

Trust, coupled with loyalty, were factors of the culture at Blackberry. However, this did not translate across the organization but rather manifest within, in siloed groups.

> *So if you have a really emotional conviction it's because [you have] some layer of loyalty infused in that belief. You know I believe in this because these four other people that I worked through the night with for two years believe the same thing. (Blackberry, P8)*

> *So intellectually [you would] explain this point to Mike, what you were talking about, he'd go "Yeah, yeah, yeah," and he'd go talk to the four guys he worked with for five years building Blackberry, and they wouldn't have any idea what we were talking about. The next day I'd come back and he'd be back to (the decision) he [had made] before. (Blackberry, P8)*

This lack of trust across the organization was evidenced in the communication between departments and management. There was a nervous focus on immediacy and reacting to problems versus long-term vision, trust, and developing a culture for innovation.

> *If I send you an email, I know you have received the email.If you don't respond to my email, I'm going, "What happened? Has our relationship gone sour, have I lost social capital with you?"That's how it worked. Everybody talked to everybody all the time and if you didn't respond you'd get in trouble for it. So how do these things happen? They happen when (a company) is very problem-oriented, focusing on what isn't working, and "What are we doing about it?" (Blackberry, P8)*

It is this focus on immediacy and problems within the culture that had a significant impact on the employees who built the Blackberry smartphone and created its

success. The use of the word “survive” by one of the participants is indicative of the culture that led to Blackberry’s downfall. The culture of the once successful company did not support theinnovations necessary to sustain success.

> *There was a nucleus of people at RIM who built the Blackberry. They went through hell to build it and it was very successful, and they had conviction and what worked. The stuff that you had to do to survive after the iPhone launch was very different, and collectively they could not bring themselves to embrace those changes. (Blackberry, P8)*

The level of change that occurred in the culture, as evident through the interviews, is quite surprising. Trust, which was initially a key component of the culture within BlackBerry, was almost entirely wiped out once the company grew. This departure from the culture that originally facilitated success, and one that closely aligned with the culture of other successful firms, is probably a key driver of BlackBerry’s ultimate failure. I posit that this change in culture and the rapid growth the company experienced were the key factors that ultimately lead to its failure. The causal link between growth and culture change and its ultimate demise is something that is difficult to determine. Did the rapid growth of the company drive the cultural change which ultimately led to its demise or was its success in and of itself that created a sense of complacency which eroded the culture? These are questions that can be explored through a deeper analysis of Blackberry as a singular focus. For the purposes of this work, it is evident that the successful BlackBerry firm was materially different from the unsuccessful BlackBerry firm in terms of its culture and focus on innovation.

4.10.2 Organizational structure

Cross-functional integration

The participants suggest that the leadership was not able to encourage collaboration and trust between the four different product development centers (PDCs). These PDCs were based in different locations and competed against each other to develop the latest products and applications.

> *What was probably missing was the integration part, as in, "Okay I will do this, I will let him do that, it's fine if he takes fifty percent of the credit…". What would rather happen is "Oh, no, no, I am going to do everything, I am going to keep the knowledge here, this is my PDC and I am going to keep the knowledge here and not there". The system efficiency goes down and the trust go[es] down. In the long term it doesn't help. (Blackberry, P10)*

Often times, these PDCs worked on the same project but didn't share their knowledge with other PDCs. This led to a wastage of time and resources and a delay in coming up with innovative projects and a missed opportunity. The participants suggest that if there had been a collaborative focus on improving integration between PDCs, they would have collaborated and would have been able to launch products on time.

Goal setting and incentives

> *I think they kind of failed in that ... providing this feedback or rewards in terms of a successful launch. It could have been better. (Blackberry, P7)*

> *It was called VIP, variable incentive pay. They had this formula on guard which would give you Blackberry success, you[r] individual success, and there were three different parameters. Based on that you would get your incentive yearly. (Blackberry, P10)*

Though Blackberry had a formal method to calculate yearly incentives/bonuses, this was not reinstated well within the team. The incentive structure was not built to encourage innovation. Rewards were minimal and lost in the middle management politics, due to some employees feeling underappreciated or lacking motivation to ideate.

Personal movement

One of the guys that I worked with, was the world's top five best phone tuner[s]. He is from Denmark, he came here and worked here for three or four years and then he wanted to move to Florida. It went on for two and a half years but he could not move.Now he went back to Denmark and said, "I am done with you guys, whatever". (Blackberry, P10)

Towards the later part in John Chen's leadership, they would want people to go and join [the] sales force. People who were from the development department, engineering department - they were encouraged. There w[ere] sessions, there w[as] training arranged for them to go and do sales force, but [from] what I hear, it did not go very well. They did not perform as well as they wanted because sales people are just sales people....." (Blackberry, P10)

These examples clearly show how personal movement at Blackberry was not supported, and often led to the loss of great talent. New leaders tried to cross train, but they were too late and lacked clear direction. This is linked to the hypothesis, which indicates that personal movement encourages the breeding of ideas and cultivates a climate of innovation.

4.10.3 Learning orientation and attitude towards failure

Risk, failure, competition

Blackberry was more siloed. People were working in different silos. They wouldn't know what they wanted to do. Even if they do well, if it was appreciated or not - they would rather just take the easier part, more safer part, than the culture (of other companies) for sure. (Blackberry, P9)

The question arises where l[ies] the incentives of those people who can make the decisions, how much risk they have to take, why would they do it. When TH. came, the new CEO after Jim and Mike, he actually brought a whole new

marketing team. This guy…, he was brought on and it was [a] completely different strategy from marketing and sales under him. At that time, it was just too late, the product that we came out with wasn't the best in the market. (Blackberry, P10)

I think it was not the best experience seeing that, the way Blackberry first went into this kind of a denial mode. "Oh no, no, no, we are the best. No one needs the best in the world camera, why would they use [this] camera, why do they need the touchscreen?" When you hear things like this you can raise a question mark ... [do] these guys know what they're talking about? The world is moving towards us, the world is moving towards apps. (Blackberry, P8)

Based on the informants' perspectives, it is evident that Blackberry had a risk-averse culture. People wanted to take a tried and tested path to avoid failure, a major inhibitor of innovation. They suggest that Blackberry was not concerned about competition and didn't take into account where the industry was going.

4.10.4 Leadership

You were told what to do and then you would see [of] all the ideas and patents that you had put together, which one [could] be implemented, instead of, "Hey, what do you think?" (Blackberry, P7)

So this transition took a lot of time for Blackberry's senior management to understand - that they have to innovate very quickly, they have to span out products nine-months, six months, instead of one and a half years. (Blackberry, P10)

"Very poorly (laughter), literally very poorly, and you would also question their vision and you would also question the change of direction every few months. (Blackberry, P8)

One of the biggest factors contributing to Blackberry's downfall was leadership's failure to maintain its original innovative culture. The new culture of mistrust, micromanagement, and risk aversion, coupled with a failure to recognize the need to change at all levels,contributed to this downfall. These failures were compounded by a thick layer of mid-management that made decision making cumbersome. Though Blackberry came up with the Innovation Center later, it was again infested with leadership chaos and confused priorities. The decisions were made strictly top-down. The vision of the company was changed very frequently, which led to an overall confusion. The PDCs were not aligned with the company's vision. The fleeting focus of the company also created a conflict of interest in times of crisis.

4.11 Palm

In this study, the findings suggest that Palm had similar attributes to the other companies. It adopted a Prospector strategy (Miles and Snow, 1978), with a few layers of management and an integrated approach to product development. It experienced early success in the smartphone industry and became one of the leaders quite quickly before declining just as quickly. Palm, much like Blackberry, experienced a moment of complacency upon initial success and moved away from a Prospector style strategy. In contrast to Blackberry, it quickly recognized the changing market and went back to a Prospector approach, acquiring new talent and leadership from leading companies in Silicon Valley. It went to great lengths to facilitate the development of a novel product by essentially creating an organization within an organization to develop the next generation product. It was understood at the highest levels that this new product would cannibalize Palm's current offering and make it obsolete.Theoretically, this approach should have delivered a successful result, as it has been postulated by Christensen (1997) that established organizations can avoid disruption by developing an autonomous division within an organization to develop disruptive products.

4.11.1 Organizational culture

The company hired top talent and actively sought and acquired the best people from the industry, particularly post-2007, in an attempt to regain market share. This talent adopted an entrepreneurial spirit and a prospector mentality. High motivation and

engagement were evident at Palm, from the perspectives of the informants. Terms like “revolutionary”, “build something great”, and even “kick-ass products” are indicative of the common vision, motivation, and level of engagement of the employees.

> *Palm was interesting at that time, it was a big company in the early 2000s and then it really sharply declined. It was tough to be competitive and that is kind of when Rubenstein took over, and it ended up being very entrepreneurial. (Palm, P24)*

> *It wasn’t a huge company, it was like five or six hundred people and we were kind of in survival mode, but there was also this sort of fresh blood with people coming in, and they wanted to build something great … that is kind of the start-up mental[ity], you are not thinking about “Where am I going to be on my career ladder?” There is a lot less of that in the valley. A lot of it is just producing kick-ass products and people were just motivated by what we could do in the industry and launching a revolutionary OS that’s giving people a choice. Maybe in the back of their mind, they are like “Yeah, this could help me in my career if this is successful.” Obviously there is that kind of equity part of it, or you wouldn’t be a part of the next big start-up and get acquired and all that kind of stuff. I didn’t see a lot of that at Palm, I think a lot of the motivation there was … let’s get a kick-ass product out the door. (Palm, P23)*

Trust

A sense of trust was evident in the broader organization at Palm. One informant used terms such as “cross-functional leader”, “quarterback”, and “married to the person” to describe the intense yet positive relationship at Palm, particularly within the product marketing team.

> *“[There] is a PMM, the product marketing manager, and then you have all of the outbound folks - the traditional marketing*

team. So you have channel marketing like I mentioned, this would be in the US and the regions, you have PR, the web team, you have your sales training, and they all look to this one person - that's why you are a cross-functional leader for all of them. I kind of call it the quarterback of the launch. You might not be working with all these people right at the beginning because you are probably doing more … probably pulling your story together. When you are pulling your story together, like six to eight months out or I should say more like eight to twelve months out, you are looking at the product manager. These guys are defining what the product is. Sure, they will work with me a little bit to understand the consumers and how we go to market, but they are actually like … it's their baby, it's their product, they are defining what the product is all about. What they are doing is working with…mostly engineering, software, and hardware. I am sure there are other groups that they work with, but for all intended purposes they are kind of the point person for what we call inbound, and then I am the point person for outbound. I am basically married to this person. (Palm, P24)

In contrast, the sense of trust and collaboration was not as evident in the "stealth" cross-functional team that was created for NPD. Terms such as "lieutenants","isolation", "silo", and "fractures" point to the challenges inherent in the culture of the team that was tasked with creating a new, radical product for Palm.

I mean sadly the culture of those teams working on web OS, it was not great. I think part of it was the isolation, the effect of kind of isolating a team. I think if you are going to isolate that team then you should work really hard to make sure that that entire team becomes as tight-knit as possible but even in that kind of silo, there were fractures and a lot of that frankly came from the personality of the leaders. The gentleman who led engineering was not necessarily someone who was very

> *outgoing, and was [not] someone who kind of fostered a community and deep collaboration. I think that personality kind of trickled down and manifested in his lieutenants and other people who were managing the project. Even similarly on the marketing and business side, you had an individual who was kind of leading that team [and] who was just not experienced enough in terms of leading, driving deep collaboration, innovation, a sense of community teams. Unfortunately I think that kind of contributed also to there being a long gap of time between when the product actually made it out to market. (Palm, P23)*

The importance of tension or friction within a team is acknowledged as "healthy," yet in this case, the high level of this tension and friction impacted the collaboration and ultimately, the performance of the team.

> *So you are going to have friction, but there was probably more friction than there should have been and again, I kind of chalk that up to overall leadership and the personalities. Unfortunately… those teams where you just didn't have naturally collaborative personality types… it could have been a lot better than what it was. (Palm, P23)*

The comment below is quite telling and, perhaps, indicative of one of the central themes of Palm's ultimate decline and in stark contrast to the comments made from the broader organization.

> *So I think the moral of the story is that in any development effort, you need to foster a sense of community, collaboration, and togetherness and unfortunately those teams did not have that. (Palm, P23)*

Secretiveness

A high level of secretiveness was evident at Palm, based on the interviews. It appears this happened as the organization evolved and competition increased,

linking to NPD. Sensitivity and “inner circles” are also referenced, and are linked to the development of trust within the group.

> *The Palm Pre was a bit of an anomaly because it was so secretive, very secretive. The leader of the company came in at the time, it was John Rubenstein, who is kind of the grand-daddy of iPhone. He instilled a lot of that Apple philosophy of secrecy,and I mean there was literally the inner circle. If you weren’t in the inner circle, you had no idea what you were doing with the product. People heard about it in the hallways but it was pretty secretive. (Palm, P24)*
>
> *That is when they kind of pulled me in. and pulled together how we were going to talk about this product. What does it stand for? Wow are we going to announce it? All that kind of stuff… and again very, very secretive. (Palm, P23)*

This level of secretiveness is not detrimental to an organization; in fact, the interviews from Apple have clearly shown how secretiveness can function within an organization if tight integration and trust are factors that permeate throughit. Palm’s ultimate failure was driven in part by the creation of a secretive environment that did not foster the integration and trust that was requisite to achieving functional secretiveness.

4.11.2 Organizational structure

Structures for engagement, goal setting and ideation were evidenced at Palm. Meeting structures were referenced and processes were in place for ideation, linking to the vision for success:

> *When I’m in execution mode, I have my cross functionals every week and just make sure these guys are executing towards my plan that I put together. There was a lot of new processes in place to kind of ideate and brainstorm. Every Friday they had their big scrums and stuff like that, just to define what the product was standing for. (Palm, P24,)*

The informants imply a flat structure, using the “ecosystem” to reference the organizational structure that they had to create and resource in order to support NPD.

> *That was one of the bigger challenges at the time. We got knocked for a lot because we are starting in an OS and in order for an OS to grow, you need an ecosystem around it. To build an ecosystem from the ground up is difficult, but I think we did a really great job considering the resources. A lot of it is just outreach, dead relations, just getting on the horn and just working with companies, convincing them that we got a great operating system, and they should just dedicate resources to supporting it - which they did. (Palm, P23)*

Cross-functional integration

Cross-functional integration was evident at Palm from the perspective of the informants. The informants referenced their experiences with cross-functional teams. The level of competition in the market, particularly from Apple, Google and Blackberry, instigated some of this development. Again, there is a strong sense of secretiveness associated with these teams:

> *At the time when I joined, the Trio product was nearing the end of its lifespan and there were a lot more competitive, newer smartphone products that were out in the market. Palm was looking to try to compete, so they had launched internally a very stealth new OS project and I joined that team. That entire team, including engineering, product management, product marketing, other support services around the OS - we were all essentially isolated in a separate building away from the rest of the company. (Palm, P23)*

4.11.3 Learning orientation and attitude towards failure

It is evident from these interviews that failure and risk were accepted, if not demanded, factors of the culture of innovation at Palm. Terms like “clean slate” and “take the plunge” show the willingness to experiment, create, and fail.

> *We are starting with a clean slate, let’s put everything on the board and see if we can build an operating system… a lot of it just had to do with usability. Like just really using things on a daily basis, and they were pretty unique opportunit[ies] to give someone a clean slate and say, “Build an operating system from the ground up, and hardware for that matter”. (Palm, P24)*

> *You just need to take that plunge and we need to fully embrace the fact that we are building a completely new platform and we are focusing on a completely new developer community. We need to build up the teams and the infrastructure to properly recruit those developers to our platform. (Palm, P23)*

Interestingly, the creation of the smaller division impacted the open environment for open innovation and creativity. A lack of collaboration with the broader organization is implied as a result.

> *We need to come primarily from the product management team, who would basically define features, prioritize those features, specify those features. It wasn’t necessarily a kind of an open environment where anyone in the company could make a suggestion. I mean most of that primarily came from the product team and again, as I mentioned before, this was such a stealth project. Even internally there was only a small subset of the company that was even aware of it, focused on it, and actually working on it. (Palm, P23)*

Risk, failure, competition

While risk and failure were accepted in the culture of innovation at Palm, a sense of complacency was evident.

> *I think there was a little bit of complacency because Palm was doing really well, we were the leading smartphone at the time.There was arrogance and we were like, we are fine… we welcome more competition. (Palm, P24)*

Likewise, this complacency and subsequent lack of vision impacted the speed of innovation.

> *I think they understood that there was an opportunity in the market, that many people argue that they created, but they were just not able to see how large of an opportunity it was, how big of a market this would be, and how quickly you need to innovate to stay relevant in that market space. (Palm, 23)*

One informant suggests that ultimately, the willingness to innovate was there but such a "significant transition" required earlier intervention.

> *We learned a lot about that and there was some technology issues where we were just trying to work with carriers to kind of figure out speeds and operating issues. That was really the inspiration behind OS. Okay, blank slate… it's not perfect. We have an opportunity now, like we have an infusion of money from investors and let's start fresh and put the user first. (Palm, P24)*

They were, ultimately, too late.

> *The thing that Palm got right was that they understood that in order for a product to be successful, you have to have an expansive developer community. I think it was just such an uphill change and transition, and such a significant transition, that they were never able to really achieve that… to get web developers to fully embrace this new platform, and gain*

mindshare away from IOS and other platforms that those web developers were building for. (Palm, P23)

4.11.4 Leadership

The senior leadership team at Palm demonstrated trust in their teams and relied on their technical talents.

> *I think it was very powerful to just let that team go out and start something with a fresh slate with no history, like forget about anything the company has ever done. Just start fresh, "Here is your own building, here are your own tools, collaborate and do what you got to do… strong leadership to make sure they were actually on the right path and that's why leadership is pretty critical. You have an ID, a UX lead like with TS, but with strong software engineering to say… we can make that happen. I think that was the coolest part of it and when we saw the operating system, we were like "My God, it's different than everything out there," because it was usable and it was actually friendly. (Palm, P24)*

While competition had increased significantly, and the company was quickly losing market share, the leaders continually communicated a high-level vision to inspire radical innovation and product development while demonstrating trust in their teams:

> *I think Palm's leadership realized that the existing product line was not competitive with some of the newer devices that were coming out… so at the top, there was a desire to introduce a very disruptive product in the market that would be competitive, would be more competitive. There were high-level visions around what that experience should look like, but then from a bottoms-up perspective the details in terms of what the architecture of that OS would look like, how it would deliver against the specific use cases that were being defined. All of that came from the product team…so [a] very*

> *high-level vision in terms of "Hey, we want something that is cool, disruptive, that is really going to create a new market opportunity for Palm." Then the product teams were really given the reins to figure out what that actually translates into. (Palm, P23)*

Leadership was distributed at many levels, with the transformational mindset of the CEO at the forefront. It is evident that the senior leadership adopted a market-driven, visionary, and transformational stance - not micro-managing work and valuing the input of the employees.

> *So there were some overarching goals that were handed down by the CEO but most of the goals at that phase of the project were more engineering sided so they came from the engineering leadership. They came from some of the leadership that were responsible for the business teams and the marketing teams. It was really a collaboration of a lot of different leaders across the company who all had specific ideas of what they wanted to see come out of this new OS. I had a lot of interactions with some of the other marketing teams as we got closer and closer to launch. We would, of course, engage with them. There were meetings with the CEO to kind of brief him on the progress of the project.. (Palm, P23)*

The decline of Palm, as posited by the findings in this work, was driven by two sets of factors: firstly, they were too late in recognizing complacency and switching back to a Prospector strategy and secondly, they failed to effectively maintain their integrated culture in the newly setup department. I posit that their failure to obtain functional secretiveness was probably the biggest reason for their downfall. They effectively created a separated organization that was free to develop the next generation technology, but they did not ensure tight integration within the team, something that was apparent within the broader organization and a fundamental requirement to achieve functional secretiveness.

4.12 Section summary

Based on the data from this study, the key findings related to Apple, Google, Palm, and Blackberry align with this research. Table 4.2 outlines the central findings related to each company. Within each of the major themes explored, the differences between successful (Apple, Google) and unsuccessful (Blackberry, Palm) organizations are evident and discussed in relation to the current research in this field. These differences provide the foundation for the discussion in the next section of this chapter.

Table 4.2: Successful versus unsuccessful characteristics

Theme	▪ Google	▪ Apple	▪ Palm	▪ BlackBerry
Organizational Culture	▪ Team oriented ▪ Collaborative and open ▪ Talented employees ▪ Respectful and inclusive ▪ Family-like culture ▪ Risk-taking encouraged ▪ Trust ▪ Innovative ▪ Intrinsic rewards	▪ Team oriented ▪ Collaborative and open ▪ Talented employees ▪ Respectful and inclusive ▪ Risk-tolerant ▪ Trust ▪ Innovative ▪ Intrinsic rewards	▪ Talented Employees ▪ Family-like culture in the broader organization but not on the innovation team ▪ Risk-taking was encouraged ▪ Trust from senior leadership was evident	▪ Talented employees ▪ Sense of pride not maintained and replaced with blame and distrust ▪ Trust and loyalty but only within silos ▪ A focus on “survival” versus growth ▪ Lacked motivation to innovate
Learning Orientation and Attitude towards Failure	▪ -20% time to work on own ideas ▪ External focused ▪ Act fast and accept failure ▪ Innovative, creative and adaptable	▪ Personal Movement between teams supported ▪ Act fast and accept failure ▪ Defined processes for NPD	▪ Failure was accepted ▪ Defined processes for NPD ▪ Long-term vision and strategy	▪ Reactive to problems ▪ Focus on immediacy versus long-term vision ▪ Risk-averse and avoided failure

	▪ Process and growth oriented	▪ Success is determined by whether market outcomes are met		
Organizational Structure	▪ Flat/Adhocratic ▪ Prospectors ▪ Goals and processes ▪ Formalized meetings and structures ▪ Data-centered decision making ▪ Flexible and external focus ▪ Decentralized structures ▪ Quick response to market changes	▪ Flat/Adhocratic ▪ Prospectors ▪ Goals and processes ▪ External focus ▪ Data-centered decision making ▪ Formalized meetings and structures ▪ Secretive and Integrative ▪ Controlling organizational structure	▪ Flat/Adhocratic ▪ Prospectors ▪ Integration was high at the beginning but they were unable to transfer their culture of integration into the siloed organization created to disrupt their current product	▪ Prospectors to Reactor Strategy ▪ Low integration between teams became evident as the market became more competitive ▪ Little movement across teams ▪ Poor communication between divisions and management ▪ While goal setting was in place, rewards were minimal and often lost in middle management politics ▪ Hierarchical and Secretive
Leadership	▪ Shared leadership ▪ Value placed on data ▪ Conscious about hiring ▪ New Market Centered	▪ Visionary ▪ Leaders, not managers ▪ Strong sense of ownership ▪ Innovative ▪ New Market centered	▪ Visionary leadership at the senior level that was focused on innovation ▪ Transformational mindset ▪ When the silo was created for product	▪ Short-sighted ▪ High level of Customer-centricity ▪ Thick layer of middle management

	▪ Risk-taking, entrepreneurial leadership		development, the mid-level leadership was able to foster the culture and sense of integration that was in the broader culture	▪ Top-down decision making ▪ Vision changed frequently causing confusion ▪ Confusion of priorities ▪ Lack of alignment to vision

4.13 Successful versus unsuccessful cultures for innovation

The key findings that emerged in this study both contribute to and align with the literature related to successful firm performance (Abbie and Hauser, 1996; Cameron et al., 2006; Cooper and Kleinscmidt, 1991; Desphandé and Farley, 2004; Hauser et al., 2004; McLaughlin et al., 2008; Popa et al.,. 2017; Quinn and Rohrbaugh, 1983; Slater et al., 2014; Vincent et al., 2004). The literature suggests that market-driven and adhocratic firms adopt a Prospector strategy (Miles and Snow, 1978) and are driven by an external focus on outcomes, achievement, and entrepreneurialism, allowing such organizational cultures to address the needs of their external environment and customers. While the environments are intense, during periods of particular tension within the industry and organization, an organizational climate that does not reflect a shared value system and consistency at all levels will result in reduced interaction between employees in different departments. Failure to establish open communication lines can further deteriorate the innovation process (Chen and Huang, 2007). In the literature, a ‘culture of innovation’ is exemplified by socialization, common vision and shared values, expected behaviours and beliefs, and a sense of trust and respect. This ‘culture of innovation’ is further solutions-oriented while rejecting actions, thinking, and behaviors that inhibit innovation - including rigidity, control, predictability, and stability characteristic of unsuccessful firms. A culture that encourages flexibility, teamwork, and knowledge exchange within and across teams is essential to success. Fear, both in response to internal and external threats, as well as poor communication and interdepartmental integration, impacts both short

and long-term growth. The learning orientation of successful firms is identified by a high degree of collaboration partnered with accountability. Firms with a strong innovation culture stimulate lateral thinking and risk taking, while enriching their knowledge development (Oke et al., 2013; Carayannis et al., 2015; Laursen and Salter, 2006) since in dynamic and highly competitive environments, existing knowledge quickly becomes obsolete (Huizingh, 2011; Jansen et al., 2006; Teece, 2007).

The level of trust is congruent with confidence, critical thinking, new ideas, and greater outcomes. Conversely, a culture of blame and perceived failure, controlled by centralized decision making, Reactor strategies (Miles and Snow, 1978), and hierarchical management systems, hinders openness, commitment, talent development and ultimately, firm performance (Cakar and Ertuk, 2010; Dovey, 2009; Martin-de Castro et al., 2013; Popa et al., 2017; Prakash and Gupta, 2008; Senguin, 2010). The major contributions of this study, using a qualitative lens from the perspective of employees, provide both supporting and new evidence in relation to organizational culture, structures for innovation, learning orientation, attitudes toward failure and the role of leadership. This work further contributes to the literature by directly linking each of these themes to sustainable success and transformative innovation. The current literature focuses on the relationship between a single factor and how it ties to innovation, whereas this work has been able to combine multiplefactors and distill them into key aspects that tie to a firm's ability to develop transformative innovations and maintain success.

4.13.1 Organizational culture

All four companies are comprised of talented, highly skilled individuals, so that capability for RPD is possible. Pride and trust are key components of successful cultures and are linked to innovation. At Blackberry, a firm that was quite successful and at the forefront of this industry for many years, these elements were not maintained over time and the "culture of innovation" that enabled its success changed to one of blame and distrust. Blackberry underwent a shift in culture whereas in the beginning it fostered trust, the ability to fail, and provided employees with the freedom to innovate and make decisions. Later, it diverged, ensuring

decisions were made by management as opposed to personnel, confining innovation, and focusing to the direction identified, ultimately stifling creativity. From the perspective of employees, creating and maintaining a culture of trust where risks can be taken, without a culture of blame and perceived failure, is central to firm success.

At Palm, however, the overall organizational culture was supportive, grounded in trust and built on talent. This high level of trust did not translate to the smaller division that was created for NPD and thus, the culture of innovation was not sustained. The positive, innovation culture that was evident in the broader organization did not transfer to this division and hence had a negative impact on innovation. In contrast, Apple is able to ensure that each division of the organization has the same positive culture despite the level of secrecy between divisions.

4.13.2 Organizational structure

Prakash and Gupta (2008) propose that interdepartmental connectedness and trust are critical to innovation culture and climate, noting the core factors of open communication, decentralization, and high job autonomy in fostering innovativeness. Established communication structures were evident at Apple and Google along with goal setting and knowledge sharing systems. In terms of 'openness', there were differences between these two companies, with Apple employees noting a stronger sense of secretiveness about product development between teams. This idea of "functional secretiveness" is a contribution to the current literature. I suggest this is due to Apple's stronger market-orientation, as defined by Desphande and Farley's (2004) analysis of organizational cultures, which includes a controlling, organizational structure in comparison to the adhocratic, decentralized structure at Google. Interdepartmental connectedness and movement is apparent in both companies, yet perhaps at a higher level at Google. Cooper (1984), as well as Slater et al., (2014), posit that a stronger market orientation, as identified at Apple, leads to the strongest results and new product performance, followed closely by the adhocratic structure evident at Google. Interestingly enough, we see that performance in the context of Cooper (1984) and Slater et al., (2014) is very much dependent on the definition of success. Whereas Apple's results are financially superior, Google's results are superior in terms of market penetration. This is another contribution to the current

literature where we can clearly see that an adhocratic structure can outperform a market orientation structure, depending on the performance measure.

In contrast, these findings suggest that these factors were not evident in the organizational structure at Blackberry. Instead, a controlling organizational structure that lacks consistent communication and processes is noted. Slater et al., (2014) posits that a traditional, hierarchical culture that does not support flexibility and creativity does not contribute to new product success. Also noted was a 'thick layer' of management that inhibits development in comparison to the decentralized, yet process driven, Google culture. While 'control' is also a part of the Apple culture, the difference is that at Apple, control is supported by strong systems for goal setting, task accomplishment, communication and a high sense of autonomy.

4.13.3 Learning orientation and attitudes towards failure

Both Google and Apple participants suggest that failure and risk are central to the success of their companies. Google's focus on innovation and creativity is well-known, particularly with the 80-20 structure for employee work and development. With a strong level of competitiveness and market growth focus at both Apple and Google, risk-taking is supported and employees are empowered to take risks, knowing that failure is part of the process. Decisions are supported by data and employee voice is valued, given the high level of talent in the organization. Conversely, Blackberry participants suggest that despite its great success, the company became risk-averse and quite reactive. Instead of cultivating a relentless focus on new markets, there was a high level of customer-centricity and an internal focus that had an obvious impact on success. There was also a focus on immediacy versus a long-term vision for new markets. This reactive, risk and failure averse culture had a significant impact on employee engagement, the overall culture and ultimately, the success of the firm. Again, this current literature surrounding culture and innovation supports this and these qualitative findings add to the research field.

4.13.4 Leadership

In successful firms, leadership may be characterized using terms such as "risk-taking," "engaging", "entrepreneurial" and "goal-oriented," with leadership

demonstrating a strong vision, sense of direction, and a transformational mindset. The original intent of this study was to explore the key themes related to culture, risk and failure, learning orientation, goal setting, and the organizational structure. Yet in all participant interviews, the theme relating to the role of the leader and leadership emerged. Many works exist that provide insights into the founders and current senior leadership of Apple, Blackberry, and Google. This research contributes to this work, and is unique in that it provides insights from employee perspectives into the role of leadership, its impact on their work, and how they see themselves. This is an opportunity for future research since leadership emerged as a theme in this work and warrants further investigation.

Leaders and leadership were recognized as core to each of these firms. All participants acknowledge the role of the senior leader, in both successful and unsuccessful firms. It was interesting that they acknowledged the strength of the senior leadership team as a factor influencing the start-up of the company, and how leadership positioned them in the forefront of the industry (as evidenced in the Blackberry example). As the company evolved, and competition increased, leadership became defined differently. In the case of Blackberry, the attitude and approach of leadership underwent a fundamental shift wherein the focus of the senior team changed from being supportive and innovative to being controlling and reactive, impeding its growth. Their reactiveness and disregard for employee input created a culture of blame and fear, causing talent to leave. Vision was not clearly communicated, strategy was haphazard and confusion was common. This top-down model of leadership is not conducive to success in this industry. This was also evident in the Motorola experience. A top-down, disengaged leader impacted the organization and as it positioned itself for new growth, its leadership became more open, responsive, engaged, and valued the insight of talent. Although all of the leaders referenced were cognizant of ensuring they had the right talent for innovation, unless a shared, collaborative leadership model is implemented and embraced, growth is minimal.

For this study, the participants acknowledged their role as leaders and saw their work as central to the success of the firm. Frustration was evident, particularly at Blackberry, when these employees were unable to enact change. As leaders, they

see the necessity to have openness across the organizations, the structures and a culture that supports risk-taking, and an entrepreneurial, transformational mindset. It is essential for leaders to clearly align their work with the vision, and to communicate this alignment effectively. Participants from Apple and Google had a strong connection to the vision and work of their firms, and speak both confidently and excitedly about the growth and direction of the companies. In contrast, the original pride and esteem associated with working for Blackberry was replaced with a sense of defeat, made apparent in the interviews with those employees who had worked there during both the firm's early success and subsequent failure.

4.14 Chapter summary

This study employed a qualitative research design using data gathered from semi-structured interviews to investigate the culture of innovation in the smartphone platform industry, and identified key cultural factors that may be associated with successful innovation. Data was sourced from key informants who were employees at the product management level at eight well-known organizations in this industry. Thematic analysis was used to explore and identify the key themes in the data which were presented in this chapter. These findings will be discussed in Chapter 5 using supporting research to propose key components of a truly innovative culture, which may be of interest to future investors and entrepreneurs.

Chapter 5: Conclusions

5.1 Introduction

The intent of this qualitative study is to explore and identify characteristics, or essential components, related to the culture of innovation in organizations that seek to dominate an industry through radical innovation. Simply put, what are the secrets of success of billion dollar companies? How do established firms focus on innovation to create transformative innovations and dominate market share? It is these secrets or characteristics that I sought to explore in my research, positing that this new knowledge would add value to founders, venture capitalists, and the research field.

This final chapter discusses the key findings and implications in the context of the central research questions. This chapter presents the contributions of this study to both theory and management practice. The limitations of this study are outlined along with the opportunities for future research. I will also conclude with a reflection that discusses how this research has impacted me as a researcher, entrepreneur, and venture capitalist.

5.2 Study findings and implications

The intent of this research study is to add to the body of knowledge related to the culture of innovation in organizations that strive for RPI. In the research field of innovation, there is significant research that identifies the characteristics, or key components, that a firm needs to have to create radical innovations (Cooper and Kleinschmidt, 1991; Hauser et al., 2004; Slater et al., 2014; Popa et al., 2017; Vuori and Hoy, 2016). The literature explored key areas related to innovation, organizational strategies, departmental strategy, departmental integration, new product development, competitive advantage and the culture of innovation. These theories and insights provide the theoretical framework for this study, identifying gaps and providing suggestions for future research. Drawing on the work of Slater et al., (2014), who identified that it was essential and timely to explore the interrelationships between these factors for radical innovation, particularly from a ‘culture of innovation’ lens, I chose to base my research in the smartphone industry to explore these characteristics in established firms. The objective was to see if these characteristics

delineate differences between success and failure related to transformative innovation.

Through a qualitative lens, the following two questions were explored:

1. What are the key factors that define the culture of innovation of companies in the smartphone industry that contribute to transformative innovation?
2. Does this study of successful versus unsuccessful companies yield distinctive factors that impact their success?

This section shares the study's findings and possible implications. The final section is a reflection of my journey as a researcher and how this study has impacted my own work as an academic, a venture capitalist and innovator.

5.3 Discussion of common findings across organizations

The current smartphone platform industry is clearly dominated by Google and Apple. Interestingly enough, Apple was an earlier entrant whereas Google was a late entrant. After analyzing my interviews, I identified the key themes that were present across the more successful organizations when compared to the unsuccessful ones. These include the organizational culture, the structure of the organization, and the learning orientation and attitude towards failure and leadership. I also found consistency between my findings and the findings of parallel literature in organizational strategy (Fiss, 2011; Kim and Mauborgne, 2017; Lin et al., 2014; Miles and Snow, 1978; Slater et al., 2006), departmental integration (Brettel et al., 2011; Jugend et al., 2015; Rubera et al., 2010) innovation (Christensen 1997, 2008, 2015; Hopp et al., 2018; Nagy et al., 2016;) and radical product innovation development (Cooper et al., 2003, 2008, 2013; Griffin et al., 2012; Slater et al., 2014). Key findings, or knowledge claims, that emerged from this research are noted in Table 5.1.

Table 5.1: Key research findings

Theme	Knowledge Claim
Organizational Structure	Successful, established firms have a flat, adhocratic structure with minimal layers of management.
Organizational Culture	Trust is central to firm success. Openness and functional secretiveness are evident in successful firms. Complacency is highly detrimental to established firms. Talent is evident at all established firms yet must be nurtured and supported in order for radical innovation to occur. Intrinsic rewards, personal relevance, opportunities to create and engage with cross-departmental teams with the vision of the company, leads to success.
Learning Orientation	Successful firms support risk and failure, using data-driven decision making strategically. They are willing to cannibalize with a constant focus on the "next big thing".
Leadership	A transformational, prospector mindset is evident in successful firms. Value is placed on leaders who engage with employees, who have a vision, and who do not micromanage. These successful leaders support a flat, adhocratic structure to draw on talent and ideas across the firm. They are willing to fail and work at a constant, intense pace. Communication and vision are critical.
Integration	Cross-functional integration is evident at all firms. Collaboration is expected and supported. Successful firms maintain trust and collaboration through effective leadership, risk-taking, communication and support.

These insights and knowledge claims are generated from interviews with employees. It is their perspectives on the identified factors of the culture of innovation that add to the current literature as well as providing unique insights into leadership, incentives, organizational structures and the impact of leadership. The findings both align with my industry knowledge as well as the research, with a few surprising results. I didn't realize how close Palm was to actually succeeding, and I had solely attributed its failure to market timing, rather than attributing this failure to the creation of the siloed unit for new product development and a sense of complacency. I was not surprised by the Blackberry findings but anticipated that the reasoning would be different, particularly in relation to the importance of structures and processes. I was quite

aware of the secretiveness at Apple and although I initially had considered it a negative factor, I did not consider it a functional secretiveness. In fact, functional secretiveness was evident in the other organizations, such as Palm and Google, and has certainly provided a different lens through which to view how secretiveness can successfully impact an organization. This is a new contribution to the literature.

5.3.1 Organizational structure and strategy

Prospectors and Analyzers were the most successful typologies according to Miles and Snow (1978), and align with the “Balanced Strategy Firm” suggested by Cooper (2013) as indicative of top performers. Cooper's (1984, 2003, 2011, 2010, 2013) work on distinguishing top performers hypothesized that the new product strategy a department elects will determine the performance of the new product program. Cooper clearly defined the interconnectedness between the strategies used by departments and firms. Interestingly enough, we find both elements of Prospectors and Analyzers in innovative organizations such as Apple and Google. They are in fact performing both roles simultaneously, and their organizations are structured in order to facilitate this. For example, Prospectors are looking for new ideas - the quintessential purpose of an innovative company. Other aspects of an innovative organization are those that analyze and respond, and are tightly integrated and aware of the market. In their discussions on data and decision making, it is evident that interviewees from successful firms rely on data-based decision making, whether internally to explain the reasons behind failures, or externally to make decisions related to customers and competitors. It comes down to balance. This idea of employing both a Prospector and Analyzer strategy simultaneously is a new contribution to the literature.

Cooper suggests firms that use a Balanced Strategy have the highest success rate with developing products, meeting objectives and achieving success over competitors. Firms that employ a Balanced Strategy have technological sophistication and foster an environment for innovation, avoiding competitive markets and targeting high potential, growing markets instead. Likewise, Kim and Mauborgne (2005) identify the need for a specific strategic sequence to ensure commercial

validity. This is quite evident in my research, which draws on the perspectives of the employees engaged in the innovation strategies at the departmental level.

Intriguingly, I found that all the organizations were well integrated on the product and marketing side, and all were focused on innovation, whereas I originally thought this would create points of difference. This is evident in other literature and ties back to organizational and departmental strategy. Miles and Snow (1978) suggest that Prospectors are focused on innovation in terms of their approach in the market, which isconsistent with my findings since all of the companies identified were Prospectors. Pullingfrom the departmental strategy and departmental integration literature previously cited, the findings indicated elements of an Analyzer approach at the departmental level, again consistent with previous research. In terms of new findings, this research identified organizational structure themes, as opposed to strategy themes, and revealed that even firms with a Prospector strategy failed. This thereby suggests that strategy in and of itself cannot be relied upon as an indicator for success or transformational innovation.

Another important theme identified is the flatness of the organization, insofar as it enables upper management to stay connected to the development team. This allowsknowledge to spread easily, and facilitates direction and progress. It also creates an environment where performing innovations can easily be supported. Firms like Blackberry that had multiple layers of managementwith defined hierarchies are not conducive to transformative innovation.

5.3.2 Organizational culture

The impact of cultural norms, “how we do things around here,” has been identified in the literature related to radical innovation (Quinn and Rohrbaugh, 1983; Dougherty and Hardy, 1993; Desphande and Farley, 2004; Cameron and Quinn, 2006; Dobni, 2008; Rubera and Kirca, 2012; Eggers and Kaplan, 2013; Slater et al., 2014; Popa et al., 2017) and was a key area for investigation in this study.

Culture within the organization was an important differentiating theme identified among successful vs unsuccessful organizations. In terms of the critical themes identified, an environment of trust is key. The ability to fail is certainly important, but it

can range from calculated failure, in which a contingency plan is in place, all the way to an appreciation and support of complete failure.

Trust is a key element as it allows different teams to collaborate on innovation with confidence in the other team's ability. This removes the negativity and competition between teams and creates a more collaborative environment. Apple is an interesting example as it is extremely secretive between different departments and teams, but is nevertheless able to work across teams due to the inherent trust that exists within the organization and between departments.

This idea of *functional secretiveness*, a term that I created as I worked with my data, was a unique finding as it was both unexpected and contrary to the notion of integration and working in silos. In one respect, we can appreciate or perhaps even understand the functional aspect of this secretiveness from a departmental strategy context. Cooper's work on departmental strategy talks about cross-functional teams, tight integration, and a strategy at the departmental level that aligns with the broader organizational goals. With that in mind, this finding certainly aligns with previous research and links to the strong sense of trust within the organization, where secretiveness is acceptable at the departmental level -provided there is tight integration and an inherent trust factor within the culture. This was evidenced both at Apple and Google. Conversely, Palm was secretive but the element of trust was missing within the smaller division, creating in-fighting and lack of collaboration, and thereby diminishing the ability to succeed. This is a key contribution to the literature as *functional secretiveness* is not considered intuitively. When reviewing the literature on firm culture, we are intuitively predisposed to think that a secretive environment would be detrimental and contrary to the ideas of trust and integration. This work reveals that this is not the case, and in fact, secretiveness can function and even thrive - provided that the culture and structure of an organization is set up to foster functional secretiveness.

5.3.3 Leadership

The theme of leadership came up frequently in the interviews, especially in the context of trust and the ability to fail. Exploring this theme was not the original intent of my research since I was focusing on departmental level integration and strategy,

but it quickly emerged as a theme to investigate further. Once an organization is set up, its culture becomes a product of how the senior leadership - the founders - originally created or facilitated that environment. Provided they maintain and support this culture, the organization takes on a life of its own and expands that same environment. In a slight contrast, three interesting aspects emerged at Blackberry:

1. The original environment was based on trust, but this environment was purposely changed by leadership as the company began to underperform.
2. The hierarchical structure exacerbated the issue because the removal of trust further disconnected the development team from leadership.
3. The company systematically digressed from an organizational strategy perspective. While it originally fit into the Prospector category, it subsequently turned into a Defender and ultimately adopted a reactor strategy.

It is worth noting that Apple, from an outsider perspective, also has an environment with disconnected leadership but with no averse impact due to its trust factor and the flatness of the organization.

Leadership across the organization is also indicated. Key findings, from the perspective of the informants, suggest that successful leaders adopt a transformational mindset, support and encourage risk, and constantly communicate the vision. This was most apparent in the Apple, Google and Palm interviews in their references to visionary leaders. Conversely, the findings related to the senior leadership at Blackberry and the team leadership at Palm suggest that leadership attitudes and behaviours have an impact on firm success and its ability to innovate.

5.4 Relevance of the findings

The findings of this research can be applied in a systematic way to help guide the selection of companies to invest in, as there are always multiple firms chasing the same market. The research notes that flatness and an inherent level of trust, accompanied with the ability to fail, make it more likely for a company to be successful. As such, when assessing investment opportunities it would be key to look at these aspects along with the characteristics of the founders to determine if they

are more or less likely to facilitate this type of environment, and promote this type of organizational structure and culture. All things remaining equal, when assessing between organizations going after similar markets, investments should be made in favor of teams and firms that promote a trust-oriented environment where hierarchy is kept to a minimum.

5.5 Research study contributions

This research study has contributed to both theoretical knowledge and managerial practice. This section outlines both the academic and managerial contributions evidenced in this study.

5.5.1 Contributions to theoretical knowledge

This study expands on the research literature related to the culture of innovation (Cooper and Kleinscmidt, 1991; Abbie and Hauser, 1996; McLaughlin et al., 2008; Davilia and Epstein, 2015; Popa et al., 2017; Wind and Rhodes, 2017) and adopts a qualitative approach to the context of the smartphone industry. It provides unique insights into cultural and management practices. The insights gleaned stem from the lived experiences of managers in this highly dynamic and fiercely competitive industry. In order to capture the market share, to remain number one, and to seek venture capital, it is critical to identify the factors, through a human capital lens, that either inhibit or contribute to the ability to sustain and disrupt market share. It is this lens that is adopted for this research study.

This study has made several contributions to theoretical knowledge in relation to the factors associated with a culture of innovation. This study has expanded upon existing work done by Christensen and Slater in the field of innovation, whereby it takes a deeper dive into the phenomenon in which there exists a multitude of innovative organizations that are focused on creating a novel technology and are not ignoring this novel technology, as traditional disruption theory would posit. The findings align well with other bodies of literature shared in this study related to organizational strategy, departmental strategy, radical product innovation and the culture of innovation. My work adds to these bodies of research by focusing on a very specific innovation phenomenon whereby established firms with similar levels of

integration and strategies, and with an acute focus on the same market have ultimately differing outcomes. The complexities and variables that interplay within innovation have been acknowledged by both Christensen (1997, 2015) and Slater et al.,(2014), as well as by other research presented in this study. I posit that my work contributes to this literature in the following ways:

1. Identifies the new factors of flatness (organizational structure), trust (culture), and functional secretiveness (structure and integration) in relation to the ability of established firms to create radical, transformative innovations using a qualitative approach;
2. Explores the phenomenon within innovation literature wherein established firms that are completely focused on disrupting a market have differing outcomes, and ties this to organizational structure, trust, and the ability to fail;
3. Explores the interconnectedness of organization culture, structure, and strategy as it relates to sustained success and innovation;
4. Shows that secretiveness can occur within a trust and integrated organizational culture;
5. Shows that innovative organizations employ both prospector and analyzer strategies, and that even a prospector strategy can lead to overall firm failure, and;
6. Shows that integration is not a differentiating factor when it comes to transformative innovations.

5.5.2 Methodological contributions

This research study also contributes to methodology. The study design uses a qualitative research design and diverges from the dominant quantitative paradigm common to this field by using interview analysis. Only two other similar studies (Vuori and Huy, 2016; Lamaanen, 2016) adopting a qualititave methodology were found; they explored the culture of Nokia. The population investigated in this study is based in the North American smartphone industry, with participants drawn from the most well-known players in this field. The overall methodological design was that of semi-

structured interviews (Easterby-Smith et al., 2008). The unit of analysis was the manager. In order to collect data, interview questions were designed, based on a priori themes, to capture the lived experiences of the participants based on the two main research questions. The interview was semi-structured in order to reflect the literature-based inquiry from other studies, to uncover patterns reflected in the current research, and to seek new insights.This novel study, from a methodological stance, provides a model for replication across technology innovation- based industries and future studies.

5.5.3 Implications for practice

Along with the contributions to theory and methodology, this research makes a contribution to managerial knowledge and practice. Significant work is published in lead practitioner journals and major consulting reports related to the culture of innovation, with companies ranked yearly in relation to their innovation status.

5.6 Research study limitations

Several limitations are apparent in this study. Great emphasis was placed on the development and delivery of this study, in order to collect and produce defensible evidence. The data collection process was systematic and intentional. The data collection design and interview question development was based on rigorous research of appropriate methodology, along with current and seminal literature review to ensure the trustworthiness of the work. Given the nature of this research, the conclusions are a reflection of the lived experiences of the participants and aligned with the nature of the current research in this field. The aim of this qualitative study was to explore the culture of innovation and produce contributions to both theory and practice. The interviews provided a rich body of data, which in turn contributed deep evidence to the research questions explored. Given this research approach, the study is not without its limitations.

5.6.1 Generalizability

As noted by Onwuegbuzie and Leech (2009) the “goal of the interpretivist research is not to make statistical generalizations” but rather to obtain insights from phenomena in the natural settings and “attempt to make sense of them with respect to the

meanings that people bring to them" (p.883). Curtis et al., (2000) suggest that qualitative studies such as mine may involve making analytic generalizations, i.e "applying wider theory on the basis of how selected cases fit with general constructs" (p.1002). In answer to this analytical stance, I base my knowledge claims on the consistency of the data across the organizations studied. I posit that in order for these findings to be generalizable beyond innovative technology firms, the findings and contributions suggested could be tested on a much larger sample of managers in all of the organizations. This could be accomplished by transforming this study into a large-scale survey that could be delivered across the population. This large-scale survey would capture more participants, not only in the smartphone industry, but in innovative organizations from diverse industries and on a global scale as well.

5.6.2 Reliability

As noted previously, the three time periods for data collection allowed me to recognize that no new themes were emerging, as well as ensure that I had participants from each of the identified companies for the study.

While racially diverse, all of the participants in the study were male, including the leaders referenced in the interviews. While this is recognized as a male-dominant industry, given the nature of the research questions and the current climate in this industry, it would have been strategic to explore if gender plays a role in the perspectives of a culture of innovation. The exclusion of females was not intentional, yet none replied to the invitation to participate. This provides a great opportunity for future research. The settings for this study included Canada and the United States. Opportunities for future research exist to explore if there is a cultural/country impact on innovation as well.

5.7 Suggestions for future research

Based on the noted limitations, several opportunities for future research are presented.

From a methodological stance, some elements of the study could be included in a survey based, quantitative inquiry to reach a broader scope of participants. Specifically, it may be useful to explore these findings in more depth with participants

at different levels of management, capturing multiple voices from each company. In addition, a concerted effort should be made to explore the gender perspectives in relation to these findings.

The setting for this study was the smartphone industry. In order to test the broader generalizability and reliability of the results, it would be suggested to adopt a similar methodological study in other industries. This study could be replicated and used to study the culture of innovation amongst different organizations such as governments and private companies at both the local and global level. These findings could generate potential differences in organizational cultures, structures, and leadership. Given the focus on innovation and the pace of change across all organizations, a study such as this could be quite timely. While significant quantitative research exists, this qualitative methodology can extend the knowledge and create new insights into the culture and work of organizations. In this work, I quickly became aware of the benefits of qualitative research as themes emerged that I otherwise would not have contemplated or considered, and likely would have missed in a quantitative approach. This approach led me to discover the impact of concepts that I undervalued or was completely unaware of, such as the ability to fail and 'functional secretiveness', respectively.

5.8 Summary

Based on the initial research idea and subsequent questions relating to how the culture of innovation contributes to an organization's ability to create transformative innovation, data was generated and analyzed to add to the existing body of knowledge and practice on this topic. It is well documented in the extant literature in this field that leading transformative innovation requires appropriate cultures, routines structures, and an acceptance of risk with a strong focus on experimenting in unknown markets. Coupled with this, transformative innovation requires a highly talented workforce who aspire to create the "next big thing," and who are given the trust and the freedom to experiment, fail and collaborate.

Taylor et al.(2013), in their study of the most innovative companies, note, "billions of dollars are at stake for innovators that can crack the code and deliver meaningful advantage from innovation" (p.23). They suggest that to 'crack the code', it is integral

to understand the innovation environment in which a company operates as well as how to prioritize and accelerate innovation within the firm. These essential components are central to “unlocking the long-term secrets of success from innovation” (Taylor et al., 2013 p.23).

My intention for this research, to ‘crack the code’, was to explore the intersection between disruptive and radical innovations and attempt to understand what, if anything, can delineate which organizations are more likely to succeed amongst organizations that are all focused on transformational innovation. Adopting a qualitative stance, I investigated the interplay between a variety of factors from the perspectives of people in the industry, to identify potential variables that differentiate between the successful and unsuccessful innovators.

Some of my findings aligned with my current thinking, particularly related to organizational cultures and structures. As a practitioner and leader in the high-tech industry, I acknowledge the need for talent, trust, secretiveness, and collaboration. My biggest learning has been this - you can’t function without integration. As a venture capitalist and entrepreneur, I now have a deeper insight pertaining to myfuture investment choices in both start-ups and established firms.

All things remaining equal there are two fundamental things that are important. When companies are trying to create next-generation technology, they have to be tightly integrated, especially between engineering and marketing. Will the founders facilitate a flat organization, coupled with trust and the ability to fail? Again, all things remaining equal, if two companies are going after the same market and the first is focused on enabling its talent across the organization, while the second is tightly managed with an evident hierarchy, I would choose to invest in the first.

5.8 Reflection

The intent of this DBA program and subsequent research journey has impacted me as both a leader and academic. As a business leader, my findings have influenced my work. I have a stronger focus on integration and I foster a more flat organization, the advantages of which were not as evident for me previously. I am sensitive to layering levels of management. This research has changed my way of recruiting. I no longer just look for the talent on paper but I also seek sharp minds and self-starters.

I look for team players, for people who can collaborate and create. There is now an added dimensionality to my hiring practices. The terms “willingness to cannibalize” and “functional secretiveness” are now critical to my own innovation development in the medical-tech industry.

As a researcher, I surprised myself. My background in engineering and my work as a venture capitalist and entrepreneur usually dictated a quantitative approach. My business decisions are data-driven and I am most comfortable making decisions based on ‘hard data’. I originally thought I would use a survey or even code the interviews for quantitative analysis. I know now that a quantitative approach would have missed many facets and nuances, and could not possibly have led to such rich findings. Ultimately, you don’t know what you don’t know. In the future, if I am presented with a question whose answer is driven by a multitude of complexities and variables, I would choose a qualitative approach. It gave me a different lens and many times, led me to reflect on my bias about the industry, my own work, and my own knowledge. As noted, this research has changed how I think and act within my own work and I how I make decisions. I thought I would take a disruptive approach to explore this industry and challenge the status quo. I didn’t realize that the biggest disruption would be to my own work and thinking. Using my new knowledge and mindset, I look forward to future research opportunities – after all, the forces of disruption in my industry continue to accelerate.

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Appendix A: Letter for Participants

Thank you for responding to my invitation to participate in this research project. I am exploring the culture of innovation within the smartphone industry, particularly through the lens of how Marketing and Engineering/Research departments affect innovation and product launch success.

This research proposal has been approved by the University of Reading/Henley Business School Ethics Committee and I am conducting it under the guidance of my supervisor, Professor Walid Hejazi at the Rotman School of Management, University of Toronto. The anonymity of all participants will be strictly maintained. Comments and insights will not be attributed to individuals.

I will be recording the interview solely for later transcription purposes. These recordings will be transcribed and used solely by me to ensure accuracy. They will be destroyed upon completion of the project. If this poses a challenge for you, please let me know in advance.

You can withdraw at any time by sending me an email to remove your interview data from the research. If you would like to see my final results and report, I will be more than pleased to share it with you.

I look forward to meeting you soon at a convenient time and location to explore my research with you. Thank you again for your interest and willingness to participate in my work.

Regards,

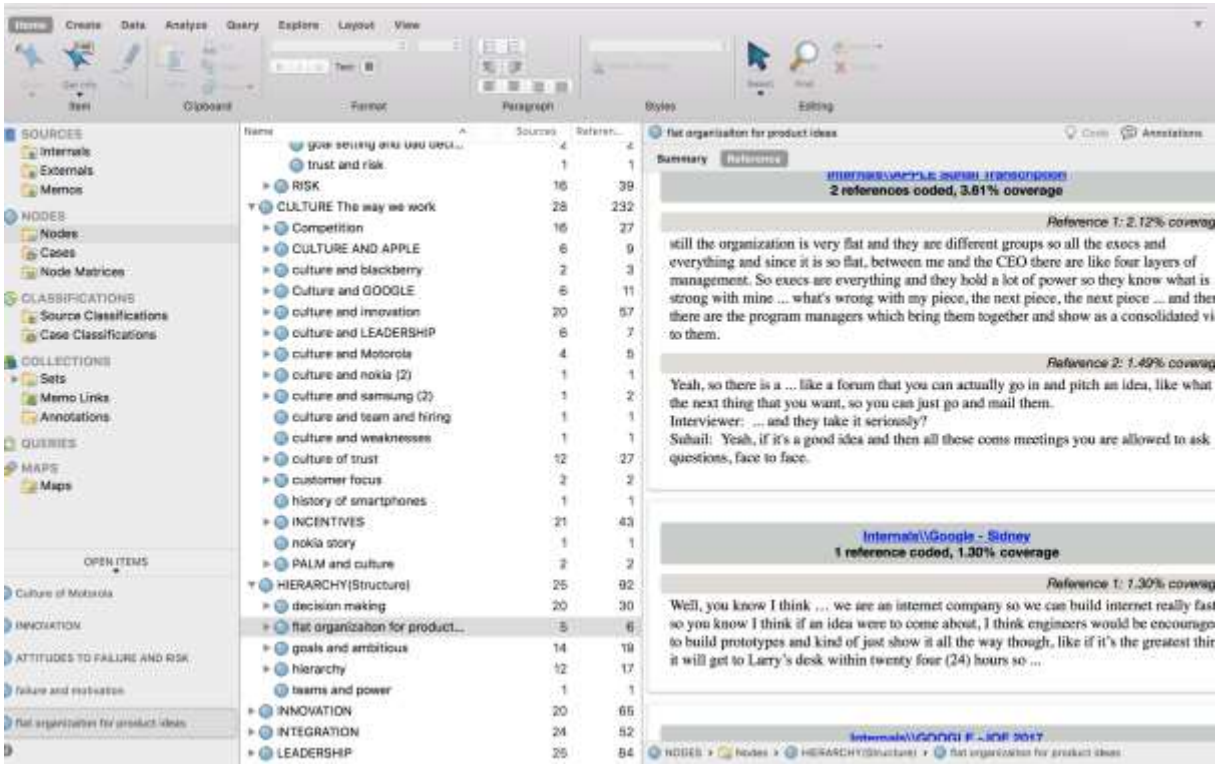
_____

Waqaas Al-Siddiq

Participant Signature:

Date:

Appendix B: Example of NVivo™ Coding



Appendix C: Executive Summary

Transformative Innovation in a Smartphone Industry: Lessons for Practitioners

The past 50 years have changed significantly the way we live and interact, all of it driven by the massive force of technological innovation. To understand what is driving this change and subsequent success, we must examine the technological organizations at the forefront of this change. Change is not driven by complacent organizations, working within traditional product lifecycles. Instead, we see organizations willing to cannibalize to push technology and humanity forward. How do you choose which one is more or less likely to succeed when at first glance they all appear similar? The talent is vast, the hunger limitless, the notion of profitability is secondary to being the best. Innovation is key to next-gen technologies and the way we engage with the world. Disruptive innovation defines how new entrants challenge established firms whereas radical innovation is the creation of novel products or ideas. Extensive research is conducted in both areas with one recurring antecedent: there are multiple, interconnected variables and complexities that work together to yield success.

This work postulates the weakness of current innovation literature is taking a more focused approach by reviewing innovation capability or the integration of two aspects, thereby missing broader implications of whether or how the ability to innovate is tied to long-term success or not. Some current innovation literature focuses on the product development process as integral to driving a firm's ability to develop innovative products. This has driven the majority of research to focus on improving this process as opposed to understanding the dynamics at the firm level.

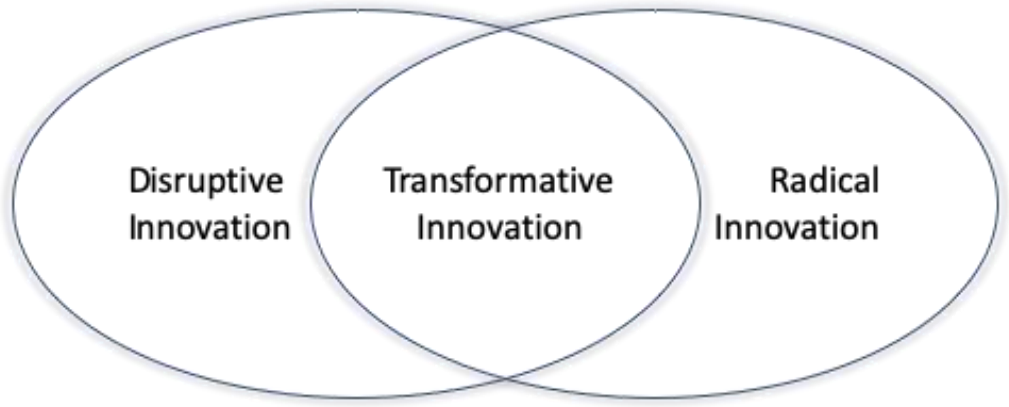
This research explores the intersection between disruptive and radical innovations and attempts to understand what, if anything, delineates which organizations are more likely to succeed amongst those that are both innovative and disruption-focused. The complexities surrounding the innovation phenomenon and the continual validation of the interplay between multiple factors directed this research to take a qualitative approach in an effort to more deeply explore the potential variables that lead to success. This research identifies that innovative organizations with the highest likelihood of success should minimally have a focus on innovation with tight integration at the product development level to continuously exploit relevant markets in a quest for new opportunities. All things being equal, this work identifies organizations that are more likely to succeed will have the additional attributes of a trust-oriented, functionally secretive environment that embraces failure with a minimum management hierarchy.

Introduction

Innovation and disruptive innovation have become populist terms that under-represent the complexity around innovation and the paradoxical elements that enable the development of innovations. Clayton Christensen, who brought disruptive innovation into the mainstream, attests that “too frequently people use the term [disruption] loosely to invoke the concept of innovation in support of whatever it is they wish to do” and acknowledges that “despite its popularity-in-use, the core concepts remain widely misunderstood” (p. 45, 2015). Sood and Tellis (2011, p.340) identify the major issue of disruptive innovation in the use of the term, where “the same term is used to describe both the causative agent (disruptive technology) and the effect (disruption).” Complexity in this topic is increased when we consider

concepts like radical innovations and types of innovations, such as process innovation, organizational innovation, and other terms that relate to technology type, process or the effect thereof. Depending on the term, the context can easily shift from the technology itself, the process of creating such technologies, or the effects caused by such technologies. It is therefore critical to provide the context when discussing innovation and clearly define what is being investigated.

Given the widespread use of the term innovation and the variety of aspects it addresses, this work focuses on a specific area of innovation that is a subset of the wider literature. Disruptive innovation is defined as either the creation of a new market or the theory of a smaller organization disrupting an incumbent player in the market. Radical innovation is defined as a technology that is new and novel and characteristic of radical functionality or technologies for emerging markets (Christensen et al, 2015; Hopp et al, 2018). This work looks at innovations that are **disruptive**, in the context of creating a new market and cause disruption, and **radical,** in the context of possessing radical functionality. We define this type of innovation as a Transformative Innovation, whereas a transformative innovation is a technology that has radical functionality [radical innovation] and is a disruptive innovation [causes disruption].



This work attempts to address the lack of empirical research that looks at the interplay of variables that facilitate the development of innovative technologies that lead to disruption [effect of]. This need has been identified by a variety of thought leaders within innovation theory, including Slater, Christensen, Sood, Tellis, Hopp. There is significant research that identifies the characteristics, or key components that a firm needs to have to create radical innovations (Hauser et al., 2004; Slater et al., 2014; Popa et al., 2017). The literature for this study explored key areas related to innovation, including organizational strategies, departmental strategy, departmental integration, new product development, competitive advantage and the culture of innovation. Drawing on the work of Slater et al. (2014), who identified that it was essential and timely to explore the interrelationships between these factors for radical innovation, particularly from a 'culture of innovation' lens, this research is based in the smartphone industry to explore these factors in established firms such as Apple, Google and BlackBerry to see if they delineate differences between success and failure related to transformative innovation.

About the Study

To garner the information on the interplay of variables that exist within the culture and environment of innovative firms that are able to maintain success, a qualitative approach was adopted for this study, providing an opportunity for original research on the key factors for a successful culture of innovation. The questions investigated were related to the subjective views of individuals engaged in the smartphone industry related to culture and success, their perceptions of engagement and integration across departments, their views of risk-taking, failure and leadership in relation to the success, or failure of the company. An inductive approach was

adopted; 28 managers, spanning 8 companies, were interviewed, with anonymity ensured. The rationale for this choice of research is further validated through the discussion within broader literature of the complexity of innovation, the lack of empirical data, the interplay of variables that foster such environments, and the need for deeper insights to identify differentiating factors.

Symbiotic Paradoxes of Innovation

The Organizational Structure and Strategy Paradox

Prospectors and Analyzers were the most successful typologies according to Miles and Snow (1978) and align with the “Balanced Strategy Firm” suggested by Cooper (2013) as indicative of top performers. Cooper's work on distinguishing top performers, hypothesized that the new product strategy a department elects will determine the performance of the new product program. Cooper clearly defined the interconnectedness between the strategies used by departments and firms. Interestingly enough, we find both elements of Prospectors and Analyzers in innovative organizations such as Apple and Google. They are in fact doing both simultaneously and their organizations are structured in order to facilitate this. For example, Prospectors are looking for new ideas, the quintessential purpose of an innovative company. Analyzing and responding, another aspect of an innovative organization where they are tightly integrated and aware of the market. In their discussions on data and decision making, it is evident that successful firms rely on data-based decision making, whether internally on the reasons behind failures or externally related to customers and competitors. It comes down to balance. This idea of employing both a Prospector and Analyzer strategy simultaneously is a new contribution to the literature. Cooper suggests firms that use a Balanced Strategy

have the highest success rate with developing products, meeting objectives and achieving success over competitors. Firms that employ a Balanced Strategy foster an environment for innovation, as they avoid competitive markets and target high potential, growing markets and technological sophistication. This is quite evident in this research, which draws on the perspectives of the employees engaged in the innovation strategies at the departmental level. Intriguingly, all the organizations were well integrated when it came to the product and marketing side and all were focused on innovation, something that was originally assumed as the points of difference. This is evident in other literature and ties back to organizational and departmental strategy. Miles and Snow (1978) identify that Prospectors are focused on innovation in terms of their approach in the market, something consistent with my findings as all of the companies identified were Prospectors. The findings showed elements of an Analyzer approach at the departmental level, consistent with previous research. In terms of new findings, this research identified themes related to the organizational structure as opposed to strategy and showed that even firms with a Prospector strategy failed, thereby positioning that strategy in and of itself cannot be relied upon as an indicator for success or transformational innovation.

Another important theme identified is the flatness of the organization because it enables upper management to be connected to the development team so that knowledge is easily spread and direction and progress can be facilitated. It also creates an environment where innovations that are performing can easily be supported. Firms, like Blackberry, that had multiple layers of management, with defined hierarchies, are not conducive to transformative innovation.

The Organizational Culture Paradox

The impact of cultural norms, “how we do things around here” has been identified in the literature related to radical innovation (Cameron et al., 2006; Dobni, 2008; Slater et al., 2014; Popa et al., 2017) and was a key area for investigation in this study. Culture within the organization was an important differentiating theme identified among successful vs unsuccessful organization. In terms of the critical themes identified, an environment of trust is key. The ability to fail is certainly important, but it can range from calculated failure, as in a contingency plan is in place, all the way to an appreciation and support of failure

There is an opportunity for nearly anyone working on it to push an idea. (Apple)

The culture here is very collaborative and helpful and I'd say that is a distinct difference between every other company I have worked for. In other contexts, I have seen information hoarding, where information is viewed as "my advantage," therefore, "I will not share information with you." Whereas here, information is shared extraordinarily freely and I think that is an enormous advantage. (Google)

Trust is a key element as it allows teams to collaborate on innovation with confidence in the other team's ability. This removes the negativity and competition between teams and creates a more collaborative environment. Apple is an interesting example as it is extremely secretive between different departments and teams but is able to work across teams due to the inherent trust that exists within the organization and between departments. As one Apple manager states, "*If you asked me to describe the culture professionally in one word, I would say it is very secretive because part of the allure of it is "What are they going to do, what are they going to do this time?"*

The Leadership Paradox

Leadership is central in the context of trust and the ability to fail. Once an organization is set up, its culture is a product of how the founders originally created that environment. Provided they maintain and support this culture, the organization takes on a life of its own and expands that same environment. In somewhat of a contrast, at Blackberry, three interesting aspects emerge:

1. The original environment was based on trust but this was purposely changed by leadership as the company began to underperform.
2. The hierarchical structure exacerbated the issue because the removal of trust further disconnected the development team from leadership.
3. The company systematically digressed from an organizational strategy perspective where it originally fit into the Prospector category but subsequently turned into a Defender and ultimately adopted a reactor strategy.

Leadership is the critical thing to create a culture for innovation. That is the most important thing. The culture here is distinctly different from any company I worked for and it starts from the top down.. Any employee can ask any question, only limited by time… if there is sixty thousand people and there are only so many leaders. If there is a meeting with leadership, anyone is allowed to question and there is no constraint on [an] individual employee's ability to speak freely and openly. (Google)

The strength of the company was [that] Mike got everyone to do what he wanted them to do, but the weakness of the company was that everybody did what he wanted them to do.. It was just too little, and that just sank the ship. He wanted to build stuff just to up his power at negotiating with other companies, including building things, dedicating resources to it, and it [didn't] matter if it was for the customers or not. (Blackberry)

This is interesting because Apple, from an outsider perspective, also has an environment with disconnected leadership but with no adverse impact due to the trust factor and the flatness of the organization. Leadership across the organization is evidenced. Successful leaders adopt a transformational mindset, support and encourage risk and constantly communicate the vision. Conversely, hierarchical leadership behaviors, and the absence of trust, suggest the negative impact of leadership on firm success and its ability to innovate.

The Rewards Paradox

Hard work is important but having innovative, brilliant ideas is much more important. (Samsung)

I think it's really a matter of how big an impact we can make. I think a lot of the products that we work on these days are kind of being used by close to a billion users and I think that is a big enough incentive that actually drives a lot of people (Google)

The pace of this industry culture is demanding. While the participants value the work that they do and feel rewarded for it, there is no question that even with support, the work culture is intensive and exhausting. From a culture stance, participants identify supports put in place to address these environmental challenges so that the intensity of the work is somewhat balanced with the high expectations, coupled with good benefits and compensation. Employees value options such as stock priorities and rewards. More evident in this research was the link between performance and intrinsic rewards, related to pride, public recognition, and corporate success. It's not about the money, it's more about the impact. While benefits exist, the participants suggest that there is still a high pressure to engage and perform constantly. Employees are empowered by the trust that is placed in them and their work. This work shows the link between an environment that fosters trust to intrinsic rewards as opposed to extrinsic ones. It is creating an environment that fosters intrinsic value that create a sense of pride and passion for individuals to strive for and push innovation.

The Learning Paradox

> *You find success at Google by taking those chances and taking those risks and putting those ideas out there. (Google)*
>
> *Blackberry was more siloed. People were working in different silos. They wouldn't know what they wanted to do. Even if they do well, if it was appreciated or not - they would rather just take the easier part, more safer part (Blackberry)*

One of the important aspects of innovation theory is the notion that organizations fail because they ignore disruptive technologies due to customer centricity. This work shows that in the cases of organizations that are continuously innovating and maintaining their market, this is not the case. In fact, it is almost the opposite. They are simultaneously looking at the customer while understanding that is a single data point. They are acutely aware that their innovation can disrupt an existing business line, and at times are trying to do just that. Most importantly, failure is something that is valued as a learning exercise. Some of these factors are at odds with the other, where you have one aspect of the organization focused on improving the existing product but also trying to disrupt that product. Similarly, the customer needs are important and being focused on yet the customer is also being ignored and new ideas are being generated. Awareness of bias and limited knowledge are combined and celebrated alongside existing success and acknowledgement of current market position. It is paradoxical in the sense that the organization believes and celebrates its current success and dominant position while simultaneously being aware that they can be disrupted externally and that

humility is critical for them to develop the next breakthrough and instead disrupt from within.

Findings

The findings of this research can be applied in a systematic way to help guide the selection of companies to invest in as there are always multiple firms chasing the same market. The research notes that flatness and an inherent level of trust accompanied with the ability to fail makes it more likely for a company to be successful. As such, when assessing investment opportunities, it would be key to look at these aspects along with the characteristics of the founders to determine if they are more or less likely to facilitate this type of environment and promote this type of organizational structure and culture. All things being equal, when assessing between organizations going after similar markets, investments should be made in teams and firms that promote a trust-oriented environment where hierarchy is limited to the minimum.

This study adopts a unique approach to the context of the smartphone industry, providing personal insights into cultural and management practices in this highly dynamic and fiercely competitive industry. The population explored is based in the North American smartphone industry from the most well-known players in this field. To capture the market share, to remain number one, and, perhaps, to seek venture capital, it is critical to identify the factors that either inhibit or contribute to the ability to sustain and disrupt. It is this lens that is adopted for this research study.

This study expands upon existing work done in the field of innovation. It takes a deeper dive into the phenomenon where you have a multitude of innovative organizations that are focused on creating a novel technology and not ignoring it, as

traditional disruption theory would posit. This work adds to these bodies of research by focusing on a very specific innovation phenomenon whereby established firms with similar levels of integration and strategies, and with an acute focus on the same market have, ultimately, differing outcomes. The complexities and variables that interplay within innovation have been acknowledged by both Christensen (1997, 2015) and Slater et al. (2014). This work adds to this literature in the following ways:

1. Identifies the new factors of flatness (organizational structure), trust (culture), and functional secretiveness (structure and integration) in relation to the ability of established firms to create radical, transformative innovations using a qualitative approach;
2. Explores the phenomenon within innovation literature where established firms that are all focused on disrupting a market have differing outcomes and ties this to organizational structure, trust, and the ability to fail;
3. Explores the interconnectedness of leadership, culture, structure, and strategy as it relates to sustained success and innovation;
4. Shows that secretiveness can occur within a trust-centric and integrated organizational culture;
5. Indicates that innovative organizations employ both prospector and analyzer strategies and that even a prospector strategy can lead to overall firm failure; and,
6. Demonstrates that integration is not a differentiating factor when it comes to transformative innovations.

Conclusion

It is well documented in the extant literature in this field that leading transformative innovation requires appropriate cultures, routines, structures, an acceptance of risk with a strong focus on experimenting in unknown markets. Coupled with this a highly talented workforce who aspire to create the “next big thing” and require trust and the freedom to experiment, fail and collaborate. Taylor et al (2012), in their study of the most innovative companies globally, note, “billions of dollars are at stake for innovators that can crack the code and deliver meaningful advantage from innovation” (p.23). They suggest, to ‘crack the code’ , that it is integral to understand the innovation environment in which a company operates as well as how to prioritize and accelerate innovation within the firm. These essential components are central to “unlocking the long-term secrets of success from innovation” (p.23).

The intention for this research, to ‘crack the code’, was to explore the intersection between disruptive and radical innovations and attempt to understand what, if anything, can delineate which organizations are more likely to succeed amongst organizations that are focused on transformational innovation. We investigated the interplay between a variety of factors, from the perspectives of people in the industry, to perhaps identify potential variables that differentiate between successful and unsuccessful innovators. Some of the findings align with current thinking, particularly related to organizational cultures and structures. As practitioners and leaders in the high-tech industry know, the need for talent, trust, secretiveness and collaboration is vital to success. The biggest learning is this- you can’t function without integration. Venture capitalists and entrepreneurs, now have

deeper insight into how they may choose future investments in both start-ups and established firms.

Managerial Implications

This study explores the interplay between a variety of factors and identifies potential variables that differentiate between successful and unsuccessful innovators. The results provide several implications for the industry. Practitioners and leaders in the high-tech industry acknowledge the need for talent, trust, secretiveness, and collaboration. Perhaps the biggest learning from this study is this- the environments that facilitate innovation have paradoxes that work in harmony. It is the ability to create environments that enable these paradoxes to exist that makes innovative firms unique and innovation so difficult to understand [you can't function without integration]. This study provides, to both venture capitalists and entrepreneurs, a deeper insight pertaining to future investment choices in both start-ups and established firms.

All things remaining equal, there are two fundamental things that are important. When companies are trying to create next-generation technology, they have to be tightly integrated, especially between engineering and marketing. Will the founders facilitate a flat organization, coupled with trust and the ability to fail? Again, all things remaining equal, if two companies are going after the same market and the first is focused on enabling its talent across the organization, while the second is tightly managed with an evident hierarchy, one should choose to invest in the first.

Leaders of innovation should have a stronger focus on integration and be sensitive to the layers of management. For recruiting, the findings suggest an added dimensionality for hiring practices. It is essential to look for both the talent on paper

but seek sharp minds and self-starters, for team players who can collaborate and create. The terms “willingness to cannibalize” and “functional secretiveness” are critical to innovation development. As leaders, it is essential to strike that fine balance with both, fostering an environment for innovation with a specific strategic sequence to ensure success. It is these paradoxical relationships between openness and secretiveness, of failure and success, of intense yet adhocratic structures that define the leadership, culture and organization needed for transformative innovation, to create the “next big thing”.

These paradoxes can be distilled into a few key elements for the consumption of managers, namely:

1. Flatness: This research shows that the importance of flatness as it relates to the ideation process. This enables awareness around new ideas where senior leaders are able to promote them. The ideas of secretiveness and clan-like elements are able to function and even thrive because the organization is flat, enabling ideas to permeate upwards.
2. Leadership: Senior leadership was identified as important from a vision perspective and yet from a day to day development perspective, a passive involvement was articulated. Leadership’s value was directly attributed to help create or facilitate an environment where innovation was key and the vision was understood while simultaneously staying out of the way and letting personnel execute. The biggest value of leadership was to stay out of the way.
3. Trust and the Ability to Fail: Failure is an important characteristic that needs to exist in order to succeed or facilitate an environment of innovation. If

individuals cannot fail, their appetite for risk is reduced and ultimately there is no innovation without risk. Interestingly enough, the research shows that the ability to fail and the concept of trust go hand in hand. There must be inherent trust in personnel in order for them to overcome the risk associated with failure.

4. Failure and the Ability to Cannibalize: The idea of cannibalizing is an extension of the ability to fail. Innovative companies expect and even promote the idea that their innovations will cannibalize their existing business. The idea is pushed to the point where success from a firm perspective is rooted in the notion that a new innovation will disrupt and cannibalize the existing market and otherwise would be a lesser form of success.
5. Today and Tomorrow's Customer: Traditional innovation literature shows that listening to the customer is what leads to firm failure. In innovative firms, listening to the customer is important but, likewise, there is a fundamental acknowledgment that this is simply one data point. This work shows that innovative firms are considering existing customers while simultaneously looking at future customers and everything in between.
6. Intrinsic Rewards: Management literature talks about the importance of both intrinsic and extrinsic rewards. This work shows that intrinsic rewards weigh far greater than traditional incentives and rewards. The combination of a vision and push towards innovation, with the ability to fail and trust culture, creates this desire and passion within personnel to create something novel. This creates an intrinsic value where personnel feel pride in the ability or goal to create something that was never done before. That in and of itself creates

value above and beyond monetary compensation, which further fuels the desire to innovate.

These six paradoxes are essential characteristics of the innovative firms investigated. Managers need to consider these and determine how to create or facilitate environments that promote these attributes. All things being equal, it will be organizations that exemplify these six elements that are more likely to succeed. Leaders should endeavour to facilitate these attributes while investors should strive to invest in leaders and organizations that can foster them.

Limitations

For the findings to be generalizable beyond innovative technology firms, this study could be transformed into a large-scale survey, not only in the smartphone industry, but in innovative organizations from diverse industries and on a global scale. Given the current climate in this industry, it would have been strategic to explore if gender plays a role in the perspectives of a culture of innovation. The exclusion of females was not intentional; none replied to the invitation to participate. This provides a great opportunity for future research.