

Organisational Ambidexterity and the Management Accountant: A Review

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Abstract

Dynamic external environments and the inexorable advances in computerisation have significantly curtailed the lifecycles of many products and services. The criteria applied for supporting and controlling innovation and development are diametrically opposite to those required for managing a mature capability focused on extracting maximum residual value out of a waning product.

For this reason, specialised architectures evolved to facilitate the nurture and support of both exploration and exploitation activities within one organisation. Organisations that successfully integrate the dual strategies and structures required are referred to as ambidextrous. Understanding the antecedent factors giving rise to organisational ambidexterity, becoming familiar with its various designs, and being aware of the conflicts the structures are designed to resolve, assists the management accounting practitioner to design appropriate systems for controlling these specialised architectures.

This review of the ambidextrous organisation literature explains the antecedents giving rise to organisational ambidexterity, discusses the models that have evolved and how they resolve the structural conflicts arising out of competing agendas.

Keywords

**Organisational Ambidexterity
Environment Dynamics
Control Systems
Discontinuous Innovation
Incremental Innovation,**

Introduction

The term technological unemployment (Keynes, 1930) describes a situation where the pace of technology change is so rapid that the number of new jobs created by the economy is unable to replace those made redundant by the changes. In 2014, the Economist magazine reported that for much of the twentieth century, global economies adjusted and evolved, enabling the creation of new jobs which replaced those lost in the face of constant and significant technological change (Economist, 2014). Two emerging factors are now significantly impacting on the ability of the global economy to sustain its capacity for absorbing jobs lost as a result of technological change. The first is the growing reach and power of computerisation (Frey and Osborne, 2013), and the second, the replacement of labour by capital (Summers, 2013). A significant contributor giving rise to this situation is the reduction in the cost for deploying computer power. This resulted in a substantial restructure of the global economy, a process which commenced in the closing decades of the twentieth century and continues into the twenty first (Brynjolfsson and Hitt, 2000).

When faced with rapidly changing environments management is forced to search for, select, and introduce something new before existing cash generating products or services become obsolete (Eisenhardt, 1989b; Roberts, 2004). This process of renewal strengthens the potential for future sustainability (O'Cass, Heirati and Viet Ngo 2014). It replenishes existing capability by introducing additional or new capacity for generating future cash flow (Tushman and O'Reilly III, 1996). In some industries, the competing firms will only achieve this goal by developing and executing a carefully structured process of retention and renewal (O'Cass, et.al., 2014).

The process commences by first identifying viable products or services within the existing offer that can be retained. Products or services found to be non-viable are targeted for an abandonment or harvesting strategy. A critical aspect of this renewal process is the implementation of appropriate innovation programs for developing new products to replace those found to be obsolete (Lewin and

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Volberda, 1999; Atuahene-Gima, 2005). To ensure continuity of supply this renewal by innovation should ideally be undertaken in parallel with the product abandonment process (Raisch and Birkinshaw, 2008; O’Cass, et.al., 2014).

Conflicting Agendas

A strategy that focuses on product retention and abandonment while simultaneously nurturing the development of replacements has been found to give rise to a number of irreconcilable conflicts (Cantarello, Martini and Nosella, 2012; O’Cass, et.al., 2014). The conflicts arise because the respective activities are based on contradictory agendas and reconciliation between them is difficult (Smith and Tushman, 2005).

The activities within an organisation that focus on the support required for the extant product range are collectively described as its exploit capability (March, 1991). Activities focused on developing new products, services and markets, are referred to as the explore capability (March, 1991). Simultaneous support of both explore and exploit activities give rise to a structural contradiction that lies at the heart of the conflict (Cantarello, et.al., 2012; O’Cass, et.al., 2014). The reason being that some structures are more suited to the maintenance of extant capabilities, while others support the nurturing of innovation (Pettigrew and Fenton, 2000; Eisenhardt and Martin, 2000; Benner and Tushman, 2003). Mechanistic structures built on principles of centralisation, clear lines of command, and plenty of rules, are suited for maintaining a mature established capability (Farjoun, 2010; O’Reilly III and Tushman, 2004).

Typically, this is the capability producing the extant cash generating product range (Burns and Stalker, 1961). Organic structures characterised by fluid job descriptions, high communication levels, and few rules, free up employees (Burns and Stalker, 1961). This freedom provides an environment that stimulates the new ideas required for developing new products and services (Burns and Stalker, 1961). It is an open question whether exploit activities supporting an existing product range, and exploration activities required to develop new products, are capable of being supported by a single

organisation at the same time and place (Csazar, 2013; O’Cass, et.al., 2014).

The reason these structures are so different lies in the nature of their objectives. The ultimate aim for a structure focused on exploratory activities is the development of new products or services capable of meeting the needs of emerging markets (Cyert and March, 1963; Abernathy 1978; Benner and Tushman, 2003). The innovation programs that facilitate this objective are described as being breakthrough or discontinuous (Cyert and March., 1963; Tushman, and O’Reilly III, 1996). In this paper the term discontinuous will be used. The aim of a structure focused on exploit activities is to maintain the efficiency of an extant capability (Jansen, Van den Bosch and Volberda 2005). The innovation programs that support and improve the extant cash generating capability are referred to as incremental or architectural (Tushman and O’Reilly III, 1996;).

In this paper the term incremental will be used. Implementing and nurturing discontinuous innovation requires the organisation architecture and culture to be built on experimentation, risk taking, openness, loose discipline, and a motivation that will often be further stimulated by failure (March, 1991; O’Reilly III and Tushman, 2004; O’Reilly, et.al., 2008; Farjoun, 2010). Incremental innovation however, is designed to improve the routinisation, discipline, control, risk aversion, and tightening of slack demanded for maintaining the existing capability producing the current product range (March, 1991; O’Reilly III and Tushman, 2004; Farjoun, 2010).

The disparate demands of these structural and cultural objectives illustrate the nature of the conflicting agendas (Eisenhardt and Martin, 2000; Smith and Tushman, 2005). The solution for reconciling them requires the creation of a platform able to incorporate, reconcile, and sustain both exploratory and exploitative capabilities within one holistic organisation structure (Benner and Tushman, 2003; O’Cass, et.al., 2014).

Resolving Conflicting Agendas

A widely-accepted axiom in management studies is that an organisation’s structure will ultimately be shaped by its strategy (Chandler,

1962). Roberts (2004) refers to this axiom as the standard conception in management studies. From an industrial economics perspective (Belleflamme and Peitz, 2010) this axiom supports the view that corporate strategy is an important influencing factor in determining the structural capability required for implementing strategy (Chandler, 1962; Roberts, 2004). The connection between strategy and structure provides a rationale for the emergence of architectural types designed to reconcile the conflicting explore and exploit agendas. The architectures manifest as a number of different designs; however, they are all collectively described as ambidextrous structures (Duncan, 1976; Simsek, 2009). Organisations that implement and use the designs are consequently referred to as being ambidextrous (Benner and Tushman, 2003).

Application of Organisational Ambidexterity to Management Accounting

Control systems in organisations that have embraced ambidexterity must acknowledge that the capability supporting exploration, and the one focused on exploitation of existing product, are based on conflicting agendas. Control objectives for the mature capability demand efficiency, standardisation and the avoidance of unnecessary risk. A discontinuous innovation project designed for developing new product will however only thrive in an atmosphere of creativity.

Creativity is nurtured in environments that tolerate a high degree of risk, loose coupling, and experimentation. Attempting to exercise control over the organisation by imposing one set of shared common objectives can potentially stifle creativity in the explore capability, and encourage inefficiency in the exploit capability.

Management accountants responsible for designing and maintaining control systems in organisations following dual explore exploit strategies need to understand the implications arising out of the competing agendas. This recognition will help to facilitate the way in which resources are apportioned (or directly allocated) to the respective capabilities. Understanding that each capability is shaped by different drivers will also facilitate development of key performance indicators

that are specific for the monitoring and control needs of each. Possessing this knowledge is a fundamental step towards implementing the systems which impose effective management control over the scarce resources which support the dual contradictory agendas of an ambidextrous organisation. It is therefore imperative for the management accounting practitioner to be familiar with the different organisation architectural structures designed for supporting the dual strategies of explore and exploit. These designs are identified and discussed in this paper which after briefly discussing the origins of organisational ambidexterity, proceeds to set out a detailed analysis of how the concept evolved until it gained recognition as a research paradigm in its own right (Raisch and Birkinshaw, 2008).

Origins of the Term Organisational Ambidexterity

The word ambidextrous is derived from the Latin words *ambos* meaning both, and *dexter* meaning right which, when brought together, imply the ability to be equally dextrous with both left and right hand (Simsek, 2009). The literature's use of the expression ambidextrous to describe an organisation dates back to 1976. Duncan (1976) explains the term as describing an organisation with a dual focus, aligned and efficient in managing its existing capability, but adaptable to external environment changes.

In a structural context, this implies that the organisation will be adept in maintaining a dual capability, one able to exploit existing products, services and market segments, the other hosting the exploratory activities required for developing, and implementing new products and services (Benner and Tushman, 2003). Being ambidextrous describes an organisation that is both aligned and efficient in managing existing demands, while at the same time is sufficiently adaptable to the incorporation of changes emanating from its environment (Duncan, 1976). The term ambidextrous has also been interpreted to describe an organisation with the ability to support a cost efficiency strategy through its exploit capability, and a differentiation strategy using its explore capability (O'Cass, et.al., 2014).

Dynamic External Environments

When the economic cycle results in periods of instability that are characterised by rapid and constant change, decision makers need to encourage the exploration of alternatives (Leonard-Barton, 1990). For the purpose of this paper these environments are described as dynamic. Their rapid change consistently threatens the viability of the extant product range, and the dynamics become an important catalyst for motivating firms to consider the introduction of ambidextrous architectures (Jansen, et.al., 2005; Raisch and Birkinshaw, 2008). In these environments, failure to initiate the required level of discontinuous innovation will potentially impact on the future survival of the firm (Jansen, et.al., 2005).

Balancing Exploration with Exploitation: The Organisational Ambidexterity Dilemma

A core concept characterising the research after 1991 is the juxtaposition of two concepts, exploration and exploitation (March, 1991). This juxtaposition is ubiquitously used to describe the situation where innovation (explore), and maintaining (exploit) activities are undertaken simultaneously by an organisation. This explore, exploit axiom was used by March (1991) for describing an organisation that had achieved a state of ambidexterity. The ambidexterity derives from an ability to simultaneously undertake the exploration activities required for innovation and new product development, and the exploitation activities required for maintaining the extant capability producing established products or services (Benner and Tushman, 2003). The March (1991) paper is considered by some writers (Raisch and Birkinshaw, 2008; Nosella, Cantarello and Filipinni 2012) to be the landmark publication for the literature on the topic of organisation ambidexterity (OA).

Besides the juxtaposition between explore and exploit, March (1991) also identified that when an organisation pursues a simultaneous focus on explore and exploit activities, a number of potentially negative outcomes could arise that require management intervention. These negative outcomes manifest in the emergence of potentially destructive conflicts caused by attempting to build substantially different structures that are culturally

dissimilar. March (1991) did suggest that these conflicting support structures were capable of alignment and could coexist within one organisation. Their co-existence was predicated on using a structural design based on ambidextrous principles (March, 1991; Birkinshaw and Gibson., 2004).

The precise origin for the commencement of wider research on the subject of OA is however the subject of some debate. Nosella, et.al., (2012) consider that the actual genesis is accredited to a paper published by Tushman and O'Reilly III, (1996). This paper is considered by some to be the first attempt for presenting a formal theory of OA (Raisch, Birkinshaw, Probst and Tushman 2009). Tushman and O'Reilly III, (1996) understand that an organisation is considered to be ambidextrous if it is able to compete successfully with a dual focus. The dual focus manifests as an ability to allocate resources for improving the alignment (or fit) between existing strategy, structure, culture and processes, while simultaneously preparing for the inevitable revolutions triggered by discontinuous environmental change (Tushman and O'Reilly III, 1996; Benner and Tushman, 2003; Gibson and Birkinshaw, 2004).

In the context of OA, the term discontinuous implies a situation where extant capability is being overtaken by radical change thereby compelling action to secure non-continuous renewal (Cyert and March 1963; Jansen, et.al., 2005). Later researchers (Benner and Tushman, 2003; Laureiro-Martinez, Brusoni, Canessa and Zollo 2014) refer to the Tushman and O'Reilly III, (1996) ambidextrous solution as a structural approach. This approach is characterised by the explore and exploit activities being undertaken simultaneously with each contained in a separate organisation unit (Birkinshaw and Gibson, 2004).

Developments 1996 to 2012

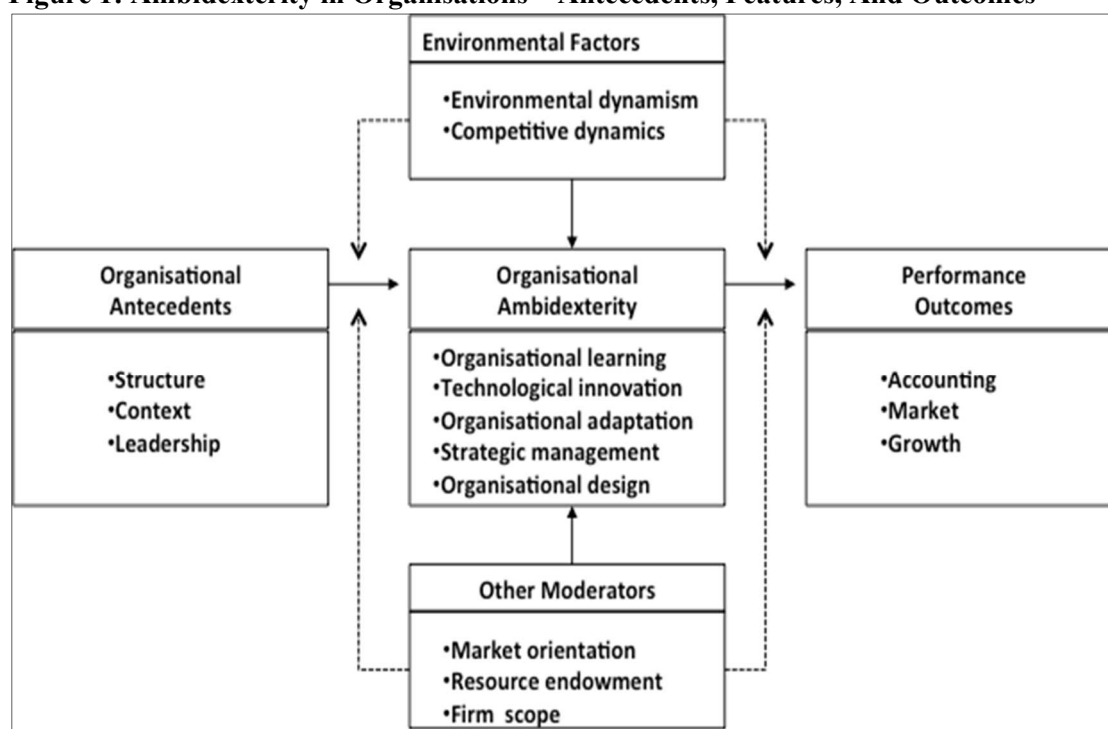
Post 1996, OA was regarded as an identifiable and specialised architectural form and had gained recognition as a research paradigm in its own right (Raisch and Birkinshaw, 2008). The published research was categorised under a number of different literature streams (Raisch and Birkinshaw, 2008). The categories are organisation science, organisational learning, technological innovation,

organisational adaptation, strategic management and organisational design (Raisch and Birkinshaw, 2008). The themes dominating each of these different literature streams provide an insight into the organisation centric features on which OA is built. Raisch and Birkinshaw (2008) explain these as follows. The themes describe the way organisations acquire and use knowledge (March 1991; Levinthal and March, 1993; Gupta, Smith and Shalley 2006), and how activities within organisations that focus on innovation are structured so as to generate future value (Duncan, 1976; Tushman and O'Reilly III, 1996; Sheremata, 2000; Gibson and Birkinshaw, 2004). An important theme is the examination of the tensions that emerge when management tries to balance the requirements for ensuring continuity while simultaneously coping with periods of change (Abernathy, 1978; Dougherty, 1992; Nadler, 1997). These tensions are described as the

need to balance the imperative for sustaining an extant capability, usually the producer of the current cash generator, but simultaneously focusing adequate resources on developments for exploiting future opportunity (Volberda, 1996; Brown, et.al., 1997; Leana, et.al., 2000; Probst, et.al., 2005). The final theme considers the solutions developed for resolving the conflicting explore and exploit agendas. The solutions are represented by the unique organisation architectures developed for providing a capability able to support dual strategies with different agendas (Burns and Stalker, 1961; Duncan, 1976; Gibson and Birkinshaw, 2004; Tushman and O'Reilly III, 1996).

A model developed by Raisch and Birkinshaw, (2008), provides a comprehensive insight into how the research on OA had developed to that date. The model is reproduced below in Figure 1.

Figure 1: Ambidexterity in Organisations – Antecedents, Features, And Outcomes



Source: Raisch and Birkinshaw, 2008

External environmental dynamics are identified by the model as significant catalysts for the emergence of OA (Auh and Menguc, 2005; Jansen, et.al., 2005; Jansen, Van den Bosch and Volberda 2006). External environment dynamism, and competitive environment dynamics, together with three additional moderating factors, represent the

triggers stimulating an organisation to choose ambidexterity. The three additional moderators are the specific market orientation of the firm, its resource endowment, and its scope (Kyriakopoulos and Moorman, 2004; Ebben and Johnson, 2005). OA manifests in how learning is organised and directed, the nature

of the technical innovation, the way in which the firm adapts to changing conditions and formulates strategic responses, and the organisation structure (Daneels 2002; Burgelman 2002; Gupta, et.al., 2006; He and Wong, 2004; Jansen, et.al., 2005). The model also lists three internal factors that are critical antecedents for a decision to assume an ambidextrous form. These antecedent factors are the nature of the organisation's internal structure, the behavioural context at the individual level, and the leadership provided by the TMT (Tushman and O'Reilly III, 1996; Bradach, 1997; Adler Goldoftas and Levine, 1999; Beckman 2006; Gibson and Birkinshaw, 2004; Smith and Tushman, 2005). Finally, the model suggests that successful implementation may be followed by superior performance outcomes in the form of improved financial returns, market expansion and firm growth (Gibson and Birkinshaw, 2004; He and Wong, 2004; Auh and Menguc, 2005; Jansen, et.al., 2006; Lubatkin, Simsek, Ling and Veiga, 2006). An underlying presumption not apparent in the model itself is that the organisation is able to focus on exploration and development, while at the same time maintain the excellence of its exploit capability producing the existing offer.

Nosella, et.al., (2012) group the body of knowledge which had accumulated before 2012 under four headings, foundations, contextual solutions, antecedents and consequences, and cross boundary perspectives. The foundations category examines OA in terms of a physical separation between two structures, one designed to conduct the innovation activities of the firm, and the other designed for maintaining the extant capability (Tushman and O'Reilly III, 1996; O'Reilly III, Harreld and Tushman 2009; Benner and Tushman, 2003). Contextual solutions refer to an examination of how OA is achieved by moulding behaviour at the individual level of the organisation rather than by structural separation (Birkinshaw and Gibson, 2004; Adler, et.al., 1999; Raisch and Birkinshaw, 2008). Antecedents focuses on identifying any specific enabling factors that will drive an organisation to select a structural or contextual solution (Chang Yang and Chen, 2009; Smith, et.al., 2010; Andriopoulos and Lewis 2010). Consequences looks for linkages between the implementation of an ambidextrous approach, and performance outcomes whether positive, neutral, or

negative (Hughes, Martin S, Morgan and Robson 2010; Chang, et.al., 2009; De Visser, De Weerd-Nederhof, Faems, Song, Van Looy, Visscher, 2009). Cross boundary perspectives consider whether the emergence of OA is an outcome from any stimulus generated by local and cross border inter firm relationships (Riccaboni and Moliterni, 2009; Lin, Yang and Demirkan 2007; Gupta, et.al., 2006).

Researchers post 1996 have also considered the question of whether an ambidextrous design actually produces superior performance outcomes. Results are not conclusive. He and Wong, (2004) and Jansen, et.al., (2005) found that performance outcomes were improved, Venkatraman, Lee and Iyer (2007) found the results to be inconclusive, and Lavie, Kang and Rosenkopf (2011) found outcomes to be negative. Recognition that a quest for superior returns might be a motivating factor for a management team to choose an ambidextrous design underlies this aspect of the research. Whereas the quest for driving additional value may be an antecedent for the choice of OA, Laureiro-Martinez, et.al., (2014) acknowledge that the management perspectives of organisations are often driven by a focus on short term returns (Eisenhardt, 2010). Implementation of an ambidextrous design may involve an initial investment which in the short term diminishes immediate returns. This outcome may act to remove any motivation for considering the design as a potential for performance improvement. Laureiro-Martinez, et.al., (2014) support this view by referring to a report in Fortune Magazine (Grove Sherman and Hadjian 1993). In this report a manager from the Intel company observes that the more successful his company becomes in its core activities, the more difficult it will be to become something else.

Developments after 2012

An additional dimension that has recently emerged is the recognition that OA is not a structural alternative that is only applicable to an organisation's product generating capability. It can also have applications relevant to marketing (O'Cass, et.al., 2014). This view is based on a recognition that innovation not only develops new product, it includes actions necessary for ensuring new product can secure the required level of acceptance from new or existing customers (or possibly both). This recognition extends the

use of an ambidextrous approach to the firm's marketing capability. Its application would be for resolving conflicts that emerge when innovations necessary for marketing new product, are found to be incompatible with those currently in place for protecting or growing market share of existing product.

The difficulties involved in reconciling the internal structural and cultural conflicts that arise from simultaneous explore and exploit strategies have led to questions whether ambidextrous designs are a viable solution (Csazar, 2013). Govindarajan and Trimble, (2005) had already identified this difficulty eight years prior. The solution suggested in Csazar (2013) is to outsource exploration, rather than attempting to join it with an extant exploit capability. This solution avoids the need to couple both explore and exploit capabilities together within the same overall structure. In a later paper, Stettner and Lavie, (2014) found that this alternative could be extended by adopting strategies using acquisition or alliances in addition to outsourcing. They also suggest that the use of acquisitions for exploration purposes may potentially deliver superior performance outcomes to those achieved by attempting the implementation of OA within one holistic structure.

The strategic initiatives that attempt to resolve the conflicting demands of efficiency and flexibility come from the decisions made by individuals (Smith and Tushman, 2005; Eisenhardt, Furr and Bingham, 2010). Based on this recognition, Laureiro-Martinez, et.al., (2014) opened a new direction for the research into OA. By focusing on the individual or micro level of ambidexterity in organisations, they examine the antecedent factors which cause a manager to think and act in an ambidextrous way. Their research is also motivated by a desire to understand the factors encouraging managers in dynamic environments to be flexible rather than remaining fixed on achieving short term gains.

Organisational Ambidexterity: Antecedents and Structural Designs

Dynamic Environment Challenges

A critical TMT objective is to secure adequate cash flows for the firm thereby ensuring it has

the resources for servicing both immediate and future needs. This aim is achieved by increasing or improving current performance outcomes while simultaneously investing to create future value (Roberts, 2004). This goal is significantly influenced by the way in which scarce resources are balanced and allocated between the requirements of the extant cash generating capability, and the projects and activities the management team is considering for the purpose of producing future returns (March, 1991; Levinthal and March, 1993; Volberda, 1996). The need to achieve an appropriate apportionment ratio is therefore a strategic necessity that must continually be dealt with by the TMT (He and Wong, 2004).

When external and internal environments are dynamic and the longevity of lifecycles for existing products or services are uncertain, management teams potentially face an existential threat (Eisenhardt, 1989b; Atuahene-Gima, 2005; Roberts, 2004). These situations often force the TMT to embrace constant and inexorable change in order to secure the future viability of the firm (Atuahene-Gima, 2005; Jansen, et.al., 2006; Raisch, et.al., 2009). The change process involves retaining a selection of the old range, refining some offers where required, and also systematically selecting candidates for abandonment (Lewin and Volberda, 1999).

This refinement of the existing offer must be undertaken in parallel with a program for developing the future products or services that will become the cash generators of the future. In the absence of a product replenishment program the firm may have nothing left to sell in the future. This imperative to embrace change and initiate product replenishment strategies to meet the challenge presented by dynamic environments converts the resource allocation conundrum into a time critical strategic decision (Eisenhardt, 1989b). Future viability may be dependent on how quickly the management team acts to secure the appropriate strategic balance required (Jansen, et.al., 2005). In these situations, resources must continue to be allocated for ensuring the extant capability continues to deliver some measure of competitive advantage in the face of changing circumstances. However, they must also be allocated into investments with potential for creating future capability to replace any products lost to obsolescence (Volberda, 1996). Resolving this strategic

conundrum, and securing the required equilibrium, provides an organisation with the ability to adapt and to remain relevant in the face of constantly shifting demands and trends (Chandler, 1962; Roberts, 2004).

Responses to Dynamic Environments

In environments characterised by inexorable change, firm sustainability is ultimately reliant on an ability to develop a capability that will produce the future products or services demanded by a rapidly evolving external environment (Floyd and Lane, 2000; Jansen, et.al., 2005). Not allocating resources to develop the future capability therefore, could be a fatal miscalculation with the potential to threaten a firm's long term sustainability (Atuahene-Gima, 2005). A frequent but inevitable consequence of directing scarce resources into capabilities that only generate value at some future time, is that cash flows and economic returns tend to be reduced in the short term (Laureiro-Martinez, et.al., 2014). In non-dynamic environments, these factors have the effect of diverting risk averse management teams away from pursuing resource hungry innovation activities that in the short term dilute earnings (He and Wong, 2004). When faced with volatile conditions however, competent management teams will have greater motivation to undertake projects with a longer-term horizon. They will recognise that the impact of short term performance must ultimately be weighed up against the demands of long term adaptability (Smith and Tushman, 2005).

The simultaneous focus on maintaining immediate profitability while developing future capability is also explained as reflecting the imperative to simultaneously align and adapt (Gibson and Birkinshaw, 2004). The term align is equated with activities that enable the exploitation of existing opportunities within the prevailing competitive environment; adapt describes the exploration activities that deliver the potential for developing future capability (He and Wong, 2004; Jansen, et.al., 2005). Attempting to simultaneously implement both align and adapt activities within one holistic organisation structure creates structural tensions. The two sets of activities trigger a number of apparently irreconcilable conflicts that are almost paradoxical because they are based on contradictory agendas (Smith and Tushman,

2005). Organisation architectures built on ambidextrous designs are offered as solutions for resolving the conflicting agendas.

Organisations that have successfully embraced the ability to simultaneously focus on the two agendas, alignment or exploitation on the one hand, and adaptation or exploration on the other, are considered to be ambidextrous (Tushman and O'Reilly III, 1996; Tushman, Anderson and O'Reilly 1997).

Reconciling the Exploration Exploitation Conundrum

The axiom used for describing the contradictory agendas arising from the simultaneous pursuit of alignment and adaptability is derived by juxtaposing the activities that describe exploration, with those describing exploitation. Exploitation describes the need for maintaining efficient operations in a mature market, its objective is to respond to current environmental needs (Laureiro-Martinez, et.al., 2014). Exploration refers to the activities required for developing new products and services in emerging markets (He and Wong, 2004). A disengagement from the current task and a search for alternatives is required for undertaking exploration activities (Aston-Jones and Cohen, 2005). Exploration focuses on the acquisition of new knowledge, distinguishing it from the central concern of an exploit capability which is to refine existing knowledge (Levinthal and March 1993). The two disparate aims are juxtaposed throughout the OA literature and referred to as the exploration, exploitation conundrum (Smith and Tushman, 2005), frequently shortened to *explore*, as opposed to *exploit*. Lubatkin, et.al., (2006) define exploit as a response to current environmental conditions through the adaptation of existing technologies and meeting the needs of existing customers. Explore they explain as a response to latent environmental trends that stimulate the need to drive innovation in technologies and new markets.

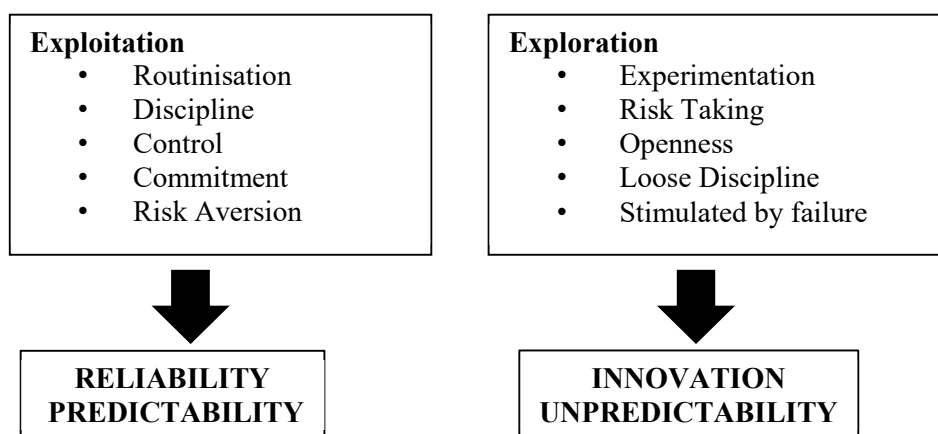
The strategies, organisation architectures, and processes required to support explore and exploit activities are fundamentally different (March, 1991). Attempting to simultaneously sustain both creates a paradoxical situation requiring contradictory agendas to be followed (Smith and Tushman, 2005). The essence of the contradiction is the difference between the objectives for achieving static efficiency on

the one hand, and dynamic flexibility on the other (Schumpeter, 1942; Abernathy, 1978). Static efficiency is the ideal situation for supporting activities necessary for maintaining an exploit capability.

These clash with the flexibility that nurtures an ability to execute the innovation strategies characterising exploration (Hannan and Freeman, 1984; Eisenhardt, 1989b; Atuahene-Gima, 2005). A further difficulty is that the organisation architecture required for supporting an extant exploitative capability, is incompatible with the structural requirements for supporting exploration activities focused on developing future needs (Guttel and Konlechner, 2009). A fundamental contributing factor triggering these incompatibilities is that the act of exploration is driven by variance increasing activities, whereas maintaining an exploitation capability requires the elimination of variance reducing activities (Farjoun, 2010). For these reasons, an attempt to embrace both acts simultaneously becomes a structural paradox. To embrace both, management must of necessity implement two agendas that bring inherent contradictions with them (Smith and Tushman, 2005).

A further complication is that an environment capable of supporting an explore capability requires a tolerance for risk and an atmosphere of freedom (Farjoun, 2010). This allows employees to experiment with the confidence that they will not be unreasonably reprimanded if their efforts result in failure. These attitudes foster a culture of experimentation, one where success is often stimulated by the frequent and inevitable failures that occur (Farjoun, 2010). A culture necessary for maintaining an efficient cash generating capability designed to produce outputs for a mature or maturing market cannot encourage failure. The result is that processes within these structures are tightly controlled by the application of highly standardised routines (Farjoun, 2010). This tight coupling in the organisation’s architectural design (Roberts, 2004), characterises a structure that is focused on maintaining the exploit capability. A successful outcome will only be achieved if internal guidelines are based on standardisation, replication, reliability, risk avoidance and discipline (Guttel and Konlechner 2009). Farjoun (2010) illustrates the conflicting tensions that arise when attempting to host the two acts of exploration and exploitation within one capability using a simple diagram reproduced below as Figure 2.

Figure 2: Contrasting Exploit and Explore Environments



Source: Farjoun 2010

The diagram shows how an exploit capability is based on a need for reliability and predictability. Exploration however, dealing with high levels of unpredictability, can only flourish in an environment that tolerates risk and stimulates innovation and experimentation.

Innovation in The Context of Organisation Ambidexterity

The exploratory dimension of an ambidextrous organisation is represented by a class of innovation described as being discontinuous (Cyert and March, 1963). Its ultimate goal is to

turn out those radical advances that profoundly alter the basis for competition in a particular industry (Cyert and March, 1963).

Discontinuous innovation initiatives are also designed to overcome the potential future cash flow deficits resulting from high levels of organisation slack that represent a threat to future viability (Cyert and March, 1963). O'Reilly III and Tushman, (2004) explain how attempts to incorporate discontinuous innovation into the framework of an established mature capability can trigger structural, process and cultural incompatibilities. This develops conflicts that require resolution before the innovation process can be successfully integrated into the organisation (March, 1991).

Discontinuous innovation is distinguished from the innovation initiatives described as incremental or architectural (Tushman and O'Reilly III, 1996; Jansen, et.al., 2005). Incremental innovation is focused on improving extant capabilities rather than developing new products that may ultimately exploit the potential offered by emerging strategic windows (Jansen, et.al., 2005). Its objectives are the improvement of existing products and operations, and maintaining the technological or process advantages required to sustain the extant capability (Tushman, and O'Reilly III, 1996). Incremental innovation therefore represents the process of continuous change necessary for maintaining efficiency during the ordinary course of an organisation's life. Incremental innovation projects will not trigger the conflicts that arise when attempting to integrate discontinuous innovation initiatives, into an existing mature structure focused on a need for efficiency.

The need for introducing discontinuous innovation initiatives into an organisation can be clearly understood when these are viewed as a response to the quantum shifts in strategic direction that are periodically initiated by organisations in response to environmental changes. These situations are explained in Miller and Friesen, (1983) and Mintzberg (1988) in this way. For most of the time organisations pursue a particular strategic orientation and any change occurs within the context of that orientation. The external environment is however subject to change, at times slowly, but occasionally in dramatic shifts. These dramatic shifts force the existing strategic orientation to be moved out of sync

with its environment. The result is tantamount to a revolution that forces the need for a quantum change process to be initiated in order to realign organisation strategies with prevailing realities (Miller and Friesen, 1983).

Ambidextrous Designs

The Spatial or Structural Approach

Organisation ambidexterity has been described as the ability to operate complex organisation designs that provide for both short term efficiency and long term innovation (Tushman and O'Reilly III, 1996). Research into the different ambidextrous designs that facilitate the simultaneous application of exploration and exploitation within one organisation structure, represents the focus of the foundation school of OA research (Nosella, et.al., 2012). This school regards the design to be the critical distinguishing feature that defines an organisation as ambidextrous. An ambidextrous architectural design could be viewed as a structural response to the choice of dual strategies executed simultaneously. One strategy is focused on developing new offers and its aim is exploration. The other, focused on maintaining the efficiency of an extant capability, is an exploit strategy.

Understanding the ambidextrous design as a structural response to dual strategies is either based on the axiom that organisation structure is determined by the needs imposed by the organisation strategy (Chandler, 1962), or by its situation (Mintzberg, 1980). Roberts (2004) refers to the axiom as the standard conceptualisation in management studies.

The term structure refers to the people in the organisation, the tasks they perform, the way in which the organisation is formally organised, and the nature of its culture (Smith and Tushman, 2005). The task of the TMT is to mould these four component parts into an effective capability that delivers an ability to execute the chosen strategic vision (Drucker, 1968; Roberts, 2004). The structure represents the solution for resolving the inherent contradictions and conflicts arising out of the explore exploit conundrum.

The ambidextrous designs achieve this by creating a separation within the architectural framework of the organisation, allowing both

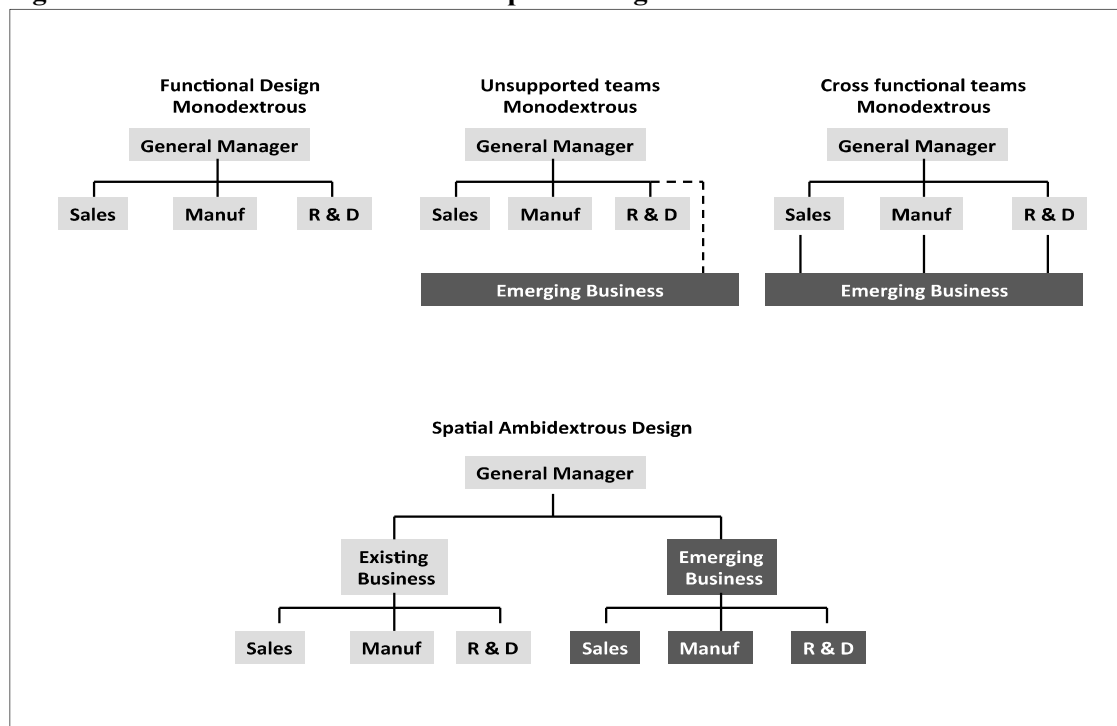
exploit and explore activities to proceed independently (Smith and Tushman, 2005). The designs also provide for the leveraging of respective capabilities and reciprocal value creation (Smith and Tushman, 2005). This is achieved by utilising embedded communication channels that allow for some level of integration between the two capabilities (Smith and Tushman, 2005).

O'Reilly III and Tushman, (2004) discuss four designs by which discontinuous innovation initiatives can be brought into an organisation structure. The four designs are reproduced as Figure 3. Of the four, three are monodextrous, and one is ambidextrous.

The essential difference between the monodextrous and ambidextrous approaches is the way discontinuous innovation activities, (represented as the emerging business), are incorporated into the organisation structure. In the monodextrous designs, the emerging business is a component of the existing

structural framework and integrated into it. In the ambidextrous design there is a separation, a new capability is created and its exclusive focus is on the introduction and execution of the discontinuous innovation programs. This spatial or structural model, which the literature tends to recognise as the traditional view for an ambidextrous design (Birkinshaw and Gibson, 2004), creates two structurally independent architectures within one organisation structure. One of the structures is focused on maintaining an efficient extant capability and is executing the exploit strategy, the other, focused on developing future capability, is executing the explore strategy. The two capabilities are incorporated within one holistic structure. Their parallel existence allows conflicting activities to be undertaken independently, thereby facilitating the simultaneous execution of both explore and exploit strategies (Smith and Tushman, 2005). Govindarajan and Trimble (2005) explain the spatial solution as a dual-purpose structure headed by one executive sponsor.

Figure 3: Structural Alternatives for Implementing Discontinuous Innovation



Source: O'Reilly III & Tushman, 2004

Their explanation is illustrated by the model shown as Figure 4. The executive sponsor is indirectly responsible for both CoreCo, the extant exploit capability, and NewCo, the explore business unit. CoreCo and NewCo are each headed up by their own general manager with direct responsibility for the sales,

marketing, manufacturing, and research and development conducted by their respective business units. O'Reilly, et.al., (2004) provide a useful table illustrating the different alignments required for maintaining CoreCo and NewCo and this is reproduced below as Table 1.

Table 1: Different Alignments in Exploit And Explore Structures

Alignment of	CoreCo – Exploit Capability	NewCo – Explore Capability
Strategic Intent	Cost, Profit	Innovation, Growth
Critical Tasks	Operations Efficiency Incremental Innovation	Adaptability, New Products Discontinuous Innovation
Competencies	Formal, Mechanistic	Entrepreneurial
Structure	Operational	Adaptive, Loose
Controls, Rewards	Margins, Productivity	Milestones, Growth
Culture	Efficiency, Low Risk Quality Customers	Risk Taking, Speed Flexibility, Experimentation
Leadership Roles	Authoritative, Top Down	Visionary, Involved

Source: O'Reilly III and Tushman, 2004

Explore Exploit Interdependencies

A fundamental principle in the formation of a spatial or structural ambidextrous capability is the need for a state of interdependence to exist between the two structures (Farjoun, 2010). This interdependence facilitates potential integration opportunities. Interdependence is explained in Farjoun (2010) as a relationship between structures that become a duality rather than a dualism. When the relationship is a dualism, the two structures exist totally independent of each other with no opportunity for interface or leverage provided. In a duality, although both units are different and independent, they require the existence of the other to fulfil their purpose and there is interdependence. In this spatial ambidextrous design, interdependence between the explore and exploit capabilities is achieved through a process of borrowing and exchange. Both structures leverage off each other to create opportunities for the mutual creation of value (Tushman and O'Reilly III, 1996; Govindarajan and Trimble, 2005).

The TMT fulfils a critical role in this process, requiring its members to respect the important role played by the past, but also to be willing to continuously change in order to meet the challenges of the future (Govindarajan and Trimble, 2005). Govindarajan and Trimble, (2005) use the example of New York Times Digital (NYTD) for illustrating the reality of this state of independence and interdependence. NYTD which equates to NewCo, is the electronic division trading under the banner of the New York Times brand. It was established to explore the potential the internet provided for distributing news electronically. The established print business unit CoreCo, offered NewCo a

number of editorial and advertising revenue sources that provided enormous opportunities for immediate leverage. The management of CoreCo were not precious with respect to this valuable intellectual property and made it available to their NewCo colleagues.

The result was that as NewCo developed its own business model and created new avenues for advertising revenues and editorial material, the same opportunities were afforded to CoreCo. This reciprocity, a tangible example of the principle of duality, allowed two independent operations to leverage off each other for mutual benefit, and in this way to also become interdependent on each other.

The Contextual Solution

An alternative to the spatial solution for OA is the development of a supportive business context that enables employees to execute both exploit and explore activities at appropriate times within their own working environments (Raisch and Birkinshaw, 2008). Context in this sense refers to all the systems, processes, and beliefs that shape individual level behaviour in organisations (Ghoshal and Bartlett, 1997). This contextual approach to OA is achieved by fostering a receptive and flexible organisation culture. Gibson and Birkinshaw, (2004) explain this as an environment that supports flexible routines, and encourages individual employees in the context of their daily work to make choices between their exploit focused alignment activities, or to seek new business by initiating explore or adaptation activities. This dual approach is achieved by fostering behavioural attitudes that facilitate the creation of initiatives alerting front line employees to opportunities beyond the confines of their

prescribed tasks (Gibson and Birkinshaw, 2004).

This contextual ambidextrous approach requires cooperation between employees, the forging of internal linkages between them, and an individual type capable of multi-tasking, and comfortable to wear more than one hat (Birkinshaw and Gibson, 2004; Gibson and Birkinshaw 2004). Contextual ambidexterity can therefore be understood as a manifestation of particular behavioural attributes. For this reason, it is often described as behavioural ambidexterity (Gibson and Birkinshaw, 2004). The essential differences between a spatial or structural design, and contextual or behavioural ambidexterity, is illustrated in matrix form by Gibson and Birkinshaw, (2004). The matrix is reproduced below as Table 2.

The matrix illustrates that the essential difference between the spatial and contextual approaches is structural. When OA is implemented as a spatial solution, it requires the formation of two discrete interdependent business units. When OA is based on a contextual solution, it manifests in the way people are organised and how they behave within a supportive culture developed through the management processes (Gibson and Birkinshaw, 2004).

Achieving Organisation Ambidexterity Across Modes

Stettner and Lavie, (2014) identify three modes for developing ambidexterity in organisations. In mode one, ambidexterity through internal organisation, the explore and exploit activities are undertaken *within* the organisation using either a structural or contextual design. Mode two ambidexterity is achieved by establishing alliances with other firms. A firm either develops and accesses new knowledge in its upstream activities by collaborating with alliance partners, or uses partners to commercialise and market existing knowledge and products through downstream activities (Stettner and Lavie, 2014). Mode three ambidexterity comes from purchasing either the explore or the exploit capability. When either mode two or three is used, ambidexterity is said to have been achieved *across modes*, whereas when both explore and exploit activities are conducted internally within one organisation, ambidexterity is

described as being *within mode* (Stettner and Lavie, 2014).

The across mode approach is suggested as an effective method for overcoming many of the difficulties encountered when attempting to simultaneously undertake explore and exploit activities within modes (Stettner, and Lavie, 2014). One of the critical advantages is that across mode methods secure both specialisation and balance, without the negative transfer and tension arising when attempting to simultaneously host conflicting routines (Stettner and Lavie, 2014). This situation is facilitated by the fact that explore and exploit activities are separated from one another by the boundaries created by the respective modes.

The Important role of the Top Management Team

A survey of one hundred and seventy high technology firms undertaken in 2006 found the composition of the top management team to be an important antecedent factor for the introduction of an ambidextrous design (Beckman, 2006). The decision to consider OA was based on team affiliations. When the team had many affiliations in common, the firm culture tended to focus on exploitation. When affiliations were more diverse, there was a greater tendency for developing an exploratory attitude. The survey illustrates the importance for the team to be exposed to the stimulus coming from external influences. The leadership provided by the TMT is also recognised by Raisch and Birkinshaw, (2008) as an important antecedent factor and they acknowledge this in the model illustrated by Figure 1.1.

A significant reason for the TMT becoming such an influential factor is the complexity involved when attempting to deal with the inherent paradoxes embedded in the ambidextrous designs (Benner and Tushman, 2015). Resolving these paradoxes presents ongoing difficulties for the teams managing the structures required (Smith and Tushman, 2005). Strategic leadership plays a pivotal role in balancing the dynamic forces demanding exploration and the inertial forces seeking to maintain the status quo (Virany, Tushman and Romanelli 1992; He and Wong, 2004; Lin and McDonough, 2011).

Consequently, if the TMT is positive about the potential benefits from OA, it becomes a driving force for the implementation (Lin, et.al., 2011). If however resolving the inherent paradoxes becomes too difficult, the TMT could very well become a significant inhibiting factor (Lin, and McDonough 2011). Lubatkin, et.al., (2006) surveyed one hundred and thirty-nine participating managers drawn from small to medium size enterprises.

The survey discovered that when management style is shaped by integrating activities collectively described as behavioural integration (Hambrick, 1994), the TMT became a catalyst for the introduction of OA. Behavioural integration has a social dimension, (encouraging an atmosphere of collaboration), and a task dimension (how effective the information exchanges are facilitated). It includes the way decisions are made, and the type of culture encouraged within the organisation (Hambrick 1994; Lubatkin, et.al., 2006). The Lubatkin, et.al., (2006) survey also found that when the management style of the TMT was built on positive aspects of behavioural integration, it became both a catalyst, and a critical supporting factor, for the deployment of an ambidextrous approach in the participating organisations.

The research into OA has also identified the important role of leadership for the introduction of OA (Lubatkin, et.al., 2006; Raisch and Birkinshaw, 2008; He and Wong, 2004; Lin and McDonough 2011). Previous research has found a relationship between the nature of the strategic leadership, and the propensity for implementing discontinuous innovation (Lin and McDonough 2011). For these reasons two further behavioural factors that may have a direct influence on the nature of the TMT leadership are considered relevant for this thesis. The first is the influence of the past, and the second is the affect from a dominant coalition with the exclusive authority for determining strategy.

When the TMT is not forced to continually reformulate strategy in response to product volatility, it is possible the team will regard history as a reliable indicator for the future. This attitude may encourage a reliance on pre-existing knowledge systems or schemas when deciding on responses to external environment influences (Norman 1976). These schemas are

systems representing beliefs, theories, and propositions that have developed over time based on each manager's personal experience (Norman 1976). Taking the form of mental representations depicting the internal and external environments in which the managers operate, schemas are likely to reflect historical environments rather than current ones (Kiesler and Sproul, 1982). The presence of strong influences from historical schemas would potentially make it very difficult for new ideas to penetrate existing TMT perspectives. Since the introduction of OA emanates from the introduction of new ideas, the presence of historical schemas may represent a material barrier for developing the attitudes necessary for implementing an exploratory culture.

A further barrier for the introduction of new ideas may originate out of the leadership structure. If the TMT comprises a dominant coalition of key individuals with significant influence over the way a firm is managed (Prahalad and Bettis, 1986), it becomes difficult for new ideas that originate from individuals outside of the dominant group to penetrate.

This barrier may also be reinforced by the stabilising influences coming from successive years of economic success (Grove et. al., 1993), and a leadership that prefers the consistency of history to the inconsistencies presented by discontinuous innovation (Denison Hooijberg and Quinn, 1995; Lewis 2000; Lin, et.al., 2011). This creates a dominant paradigm where the TMT moulds itself around a set of shared beliefs or conventional wisdom about the world because this has been the secret of past success (Kuhn 1970).

Organisation Learning a Nurturing Factor

The objectives determining the priorities for the learning activities embedded within the formal and informal organisation structure are an important precondition for nurturing an environment that facilitates and supports the introduction of OA (Burgelman 2002; Gupta, et.al., 2006; Raisch and Birkinshaw, 2008). It is important for the learning processes to incorporate programs for acquiring knowledge that will facilitate the implementation of discontinuous innovation activities.

Table 2: The Differences Between Spatial and Contextual Ambidexterity

	Spatial Design	Contextual Design
<i>How is Ambidexterity Achieved</i>	Alignment & adaptability focused activities done in separate units or teams	Individual employees divide their time between alignment and adaptability focused activities
<i>Where are decisions made about the split between alignment & adaptability</i>	At top of organisation	On front line
<i>Role of top management</i>	To define structure and make tradeoffs between alignment and adaptability	To develop the organizational context in which individuals act
<i>Nature of roles</i>	Relatively clearly defined	Relatively flexible
<i>Skills of employees</i>	More specialized	More generalized

Source: Gibson and Birkinshaw, 2004

If the focus of organisation learning is exclusively directed to supporting incremental innovation and the continuous improvement of the existing capability, this important precondition is absent (Gupta, et.al., 2006). March (1991) explains how the respective learning processes have different agendas. Learning directed for an exploit objective focuses on the reuse of existing routines and local search experience selection. Learning focused on achieving explore objectives will concentrate on variation, planned experimentation, and play. The essential nature of OA mandates that resources are not only allocated to support the efficiency of the exploit capability, they must nurture the research required for an effective explore capability (He and Wong, 2004; Gupta, et.al., 2006).

Previous research has discovered that a factor influencing the nature of organisation learning is whether it is driven from the upward or downward flows of knowledge streaming through the organisation hierarchy (Harry and Schroeder 2000; Mom, Van den Bosch and Volberda 2007). When knowledge emanates from the apex of the organisation pyramid it tends to be tight and unambiguous. The resulting learning parameters are focused on maintaining the efficiency of the extant capability because the TMT objectives are for maintaining efficiency and profitability. Employees at the lower level of the pyramid however, are more inclined to look for improvement by experimentation because their experiences were shaped by firsthand knowledge of the situation. The learning attitudes that result from this level become

more conducive for creating an atmosphere of discontinuous innovation (Mom, et.al., 2007).

This tension can cause the TMT to block upward knowledge flows because their agenda is based on avoiding negative influences that affect the efficiency of the extant exploit capability (Mom, et.al., 2007). If this occurs learning objectives become narrower and more restricted, effectively curtailing the learning vision throughout the organisation. These factors once more show the importance of the role that the TMT fulfils in creating an OA receptive culture. It also illustrates the important role played by the TMT to inhibit or encourage the implementation of OA.

Conclusion

We live in an age where constant change represents the prevailing paradigm. It is therefore incumbent on the management accountant practitioner to understand how external dynamics potentially impact their client organisations. This understanding is important when developing the systems used for monitoring outcomes and exercising control over capabilities. Management accountants also participate in the objective and strategy formation process, and these are substantially influenced by the vicissitudes present in the external environment.

This paper explains the nature of the conflicts which can arise when organisations attempt to support both explore and exploit strategies without implementing appropriate structures to house two different capabilities. The paper also provides an extensive explanation of the different organisational architectures that have

been designed to support two different structural capabilities possessing conflicting agendas. Armed with this understanding the practicing management accountant will possess those insights necessary for ensuring that resources are appropriately allocated to each capability.

This enables an equitable assessment to be made that not only illustrates the quantum of the resources already invested in each, it also facilitates any assessment of how much is to be committed in the future. Understanding the essential drivers delivering the respective explore and exploit outcomes also facilitates development of key performance indicators specific and relevant to each capability. Further, being aware that new structural designs are emerging to house innovation within mature capabilities provides the practicing management accountant with valuable knowledge. The value is represented by the management accountants' contributions to the development of organisation objectives and the formulation of strategy.

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