



Ambidexterity: An Evolutionary Review

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Abstract

This study traces the origin of the term ambidexterity in English language as well as how it came to be adopted in business literature. It explains the rationale behind balancing activities to achieve ambidexterity in organizations by drawing evidence from the biological perspective. It traces the framework in which ambidexterity has been studied to point out the various approaches to ambidexterity as well as its antecedents and outcomes. The related streams of literature which might be of value to study in conjunction with the concept of ambidexterity have also been touched upon. Finally, the study draws upon some propositions and elaborates upon the future scope in this field to finally conclude by discussing how the field can further progress.

Keywords- Ambidexterity, Exploration, Exploitation, Trade-Offs, Review

JEL Classification- Z0

Paper Classification- Literature Review

Introduction

Organizational ambidexterity, refers to the capability of an organization to both exploit and explore which means “the ability to simultaneously pursue incremental and discontinuous innovation” (Tushman & O’Reilly, 1999). There has been a lot of interest around this concept in the past two decades which makes it important and interesting. There have been review articles and studies that have structured the concept along major dimensions and contexts (O’Reilly and Tushman, 2013). The increasing number of studies has definitely led to a deepening in the understanding of this concept but there is still no clear trace as to the origin of this concept and its adoption into management literature in its current form. Thus, this study is an attempt to trace the origin of the term ambidexterity and also discover its adoption in management literature.

Ambidexterity, in organizational science was first used by Duncan in 1976. In English language, ambidexterity has been used to describe a person who is capable of using both hands equally well. It was therefore adopted in organizational science for an organization that was able to balance two contradictory activities equally well. Initially, the term was used for a range of activities but later on its scope converged to be limited within looking at or managing the balance between exploration and exploitation activities of firms (Tushman & O’Reilly, 1996). Owing to

this, it is important to look at the etymological origins of the term and its history of adoption and use in management literature.

Origin of the Term Ambidexterity and Its Adoption in Organization Theory

The word 'ambidexter' was first used in English in 1530s in a legal context for a person (a juror) who took bribe from both sides or parties for giving a verdict (etymonline). During the 1590s, the context or sense of using the word underwent a transformation and ambidexterity went on to be applied to a person who used both hands equally well (etymonline). In 1610, the meaning attributed to ambidexterity further changed and it moved on to mean double-dealing from French 'ambidextre' or Latin 'ambidexter' which when translated literally means right-handed on both sides. It comes from 'ambi' meaning both and 'dexter' meaning right-handed, thus, the characteristic of being equally skillful with both hands has been attributed to it (etymonline). Thus, for activities like typing, sports, juggling, surgery, music and so on that requires a great deal of skill with both hands, ambidexterity has been encouraged. (etymonline).

Apart from its literary use, ambidexterity also started being used metaphorically or figuratively to describe a person with superior cleverness (pointing to use of both hemispheres of the brain) or adaptability skills. This is where the use of the term started picking up and ambidexterity started being used in varying contexts. Since the time, Thompson (1967) had imagined and put forth the imagery of organizations as organisms, the metaphor of ambidexterity being applied to organizations did not seem far-fetched. Thompson (1967) characterized the paradox that an organization faces in terms of dealing with the trade-off between efficiency and flexibility. The characterization was in terms of making use of existing capabilities and building new ones in order to stay relevant in the forthcoming times (March, 1991).

Roots in Organization Theory

The term organizational ambidexterity was first used by Duncan in 1976 in his study titled, "The ambidextrous organization: Designing dual structures for innovation". It was then defined as the ability of an organization to efficiently manage the business pressures and demands of today while also adapting to the changing environment (Duncan, 1976) in terms of remaining sustainable in the long run by not compromising on efficiency and also indulging in innovation for the future.

However, interest in this field started rising only in the late 20th century and the early 21st century with the publication of March's study in 1991 which focuses on the central argument that organizational ambidexterity is achieved by maintaining the right balance between exploration and exploitation which helps the organization in being both creative and adaptive. Exploration includes experimentation, innovation, autonomy, search and risk-taking while exploitation focuses on efficiency, certainty, variance-reduction, control and refinement (March, 1991). The challenge arises because a fine balance has to be maintained to focus on both exploration and exploitation. Exploitation has an element of certainty to it and it is successful in the short run while exploration is risky because of its orientation towards experimentation and discovery. Exploration is therefore associated with uncertainty and failure but if successful it can bear a long running competitive advantage for the organization. The right balance between the two can help ensure the short term success as well as the future viability of an organization. Owing to the need emphasized by March (1991), Tushman and O'Reilly (1996) proposed an organizational structure that could promote both exploitation and exploration activities simultaneously which is what they termed as an ambidextrous organization. This led to a flurry of studies with an objective to test (a)

if ambidexterity actually helped organizations perform efficiently as well as survive in the long run and (b) how ambidexterity played out in organizational structures and what were the various forms of ambidexterity in practice (O'Reilly and Tushman, 2013).

While earlier studies looked at trade-offs as a challenge that was very difficult or next to impossible to overcome; recent studies have offered an array of resolutions to manage the trade-off. These resolutions are in the various forms of ambidexterity (Raisch & Birkinshaw, 2008) which have been discussed in the latter part of this study. Organizational design, Organizational adaptation (search and stability), strategic management (induced and autonomous strategy), organizational learning and technological innovation (incremental and discontinuous innovation) are phenomena where ambidexterity has a role to play in terms of managing the arising trade-offs (ibid).

Apart from ambidextrous structure (Tushman and O'Reilly, 1996) and context (Gibson and Birkinshaw, 2004), ambidextrous leadership (Raisch & Birkinshaw, 2008) is a recent entrant in the literature. Its main focus is the leaders' characteristics that enable organizations to deal with the contradictions they face (Smith and Tushman, 2005; Beckman, 2006; Lubatkin, Simsek, Ling & Veiga, 2006).

The Need for Maintaining Balance

Too much focus on just one aspect can be dangerous. Companies that focus solely on exploration may end up exhausting their resources on ideas that may never prove to be successful. On the other hand, companies that focus solely on exploitation may become obsolete in the long run (March, 1991) as their offering may lose relevance. This landmark idea proposed by March in 1991 led to a shift in organizational studies to bring more focus to paradoxical thinking (Lewis, 2000). This led to efforts that tried to achieve a balance to seemingly contradictory organizational tensions (Adler et al., 1999). The idea put forth established organization survival in the long-term to be contingent upon striking the right balance to engage in enough exploitation as well as exploration activities (Levinthal and March, 1993).

The above argument is supported by the biological narratives on ambidexterity. People born with an active left hand are generally advised to learn using their right hand because of the prevalence of everyday gadgets and appliances designed for right-hand use or a lack of left-handed models. The left-handed people tend to develop motor-skills in the non-dominant hemisphere as well because of their ambidextrous traits (generally imposed on to them or sometimes learnt). It is an ongoing debate if ambidexterity could increase efficiency. As it goes right handed people possess a more active right hemisphere which is responsible for language processing. The left hemisphere is equipped to deal with non-verbal activities. Training the brain to be ambidextrous might not be a very good idea according to Michael Corballis, professor at the University of Auckland New Zealand. This tends to interfere with the natural setup of the brain. A cooperative brain is better than a competing one which means, true ambidexterity is not desired. This is also not achievable as humans have one hemisphere dominant. It is possible and good to train the non-dominant hand to become more proficient; as is the case with a concert pianist who demonstrates use of both hands to display his/ her skill. This mastery is complementary rather than being competitive. Similarly, it goes for organizations, a proper balance needs to be maintained to make exploitation and exploration complementary rather than competitive (scientificamerican, 2013; theodysseyonline, 2016).

Past Research Directions

In the past studies, efforts have been made to understand ambidexterity as a holistic process which includes studying how it comes into being, what forms it is exhibited in and what outcomes does it result in (in terms of performance). Thus, at this point, ambidexterity antecedents, performance outcomes and effect of other variables (environmental actors and market factors) on ambidexterity, are dealt with.

Antecedents to Ambidexterity

Some broad approaches that the organizations adopt in order to successfully deploy ambidexterity include accommodating the seemingly contradictory tensions using different mechanisms. There is a sequential approach (Duncan, 1976) to ambidexterity which implies that firms engage in exploitative and exploratory activities at different time periods and this is also termed as temporal ambidexterity. Another approach to ambidexterity that has become one of the most well-known approaches was popularized by Tushman and O'Reilly (1996) who propagated simultaneous engagement of organizations in both exploitative and exploratory activities. This, they said could be achieved by establishing organizational divisions (structurally separated units) each with its own goals, approaches, processes and practices in place such that one division would further exploit while the other would indulge in exploration; while at the same time ensuring an integration of both the divisions to further the organizational goals. Gibson and Birkinshaw (2004) suggested a micro foundational approach to ambidexterity wherein, they argued that individuals should be free to divide their working hours between exploratory and exploitative activities based on their own judgement and this they termed as contextual ambidexterity.

Another very important approach to ambidexterity is leadership processes which has been discussed and proposed by Lubatkin et al. (2006). They make a case for maintaining the balance between exploration and exploitation at different hierarchical levels in an organization. Floyd and Lane (2000) and Smith (2006) argue that leadership processes provide different variations to achieve ambidexterity and this is very similar to integrated approaches of ambidexterity that try to combine structural, temporal and contextual in different ways and over a period of time (Tushman and O'Reilly, 1997).

Raisch & Birkinshaw (2008) look at these approaches of ambidexterity as antecedents to achieve ambidexterity in their framework and a look at them from the perspective of this framework as is discussed in Table 1 and elaborated upon in the discussion that follows.

Table 1- Comparative Analysis of Antecedents to Ambidexterity

Antecedent	Definition	Mechanisms
Structural ambidexterity	simultaneous engagement of organizations in both exploitative and exploratory activities	Spatial separation; Parallel structures
Temporal ambidexterity	firms engage in exploitative and exploratory activities at different time periods	Rhythmic switching, vascillation
Contextual ambidexterity	individuals should be free to divide their working hours between exploratory and exploitative activities	Meta-routines, Job enrichment, Shared Vision
Leadership-based ambidexterity	balance between exploration and exploitation at different hierarchical levels in an organization	Integrative approach

Structural antecedents. Structural mechanisms that are capable of balancing competing demands should be developed to achieve structural ambidexterity in organizations (Gibson and

Birkinshaw, 2004). Spatial separation and parallel structures are the two broad ideas regarding achieving these structural mechanisms.

Spatial separation is at business unit or corporate level by creating separate units that pursue either exploitation or exploration, with each unit configured to its task environment (Duncan, 1976; Lawrence & Lorsch, 1967; Benner and Tushman, 2003). An important discussion following this has questioned the extent to which these units should be integrated. There is no consensus in the literature with respect to this question and some opine of having organizations with loosely coupled units while some offer tightly coupled units and still others offer combination of both as a solution (Raisch & Birkinshaw, 2008).

The other contrasting view promotes a parallel structure that leverages people to switch between different structures depending on the task at hand (Bushe & Shani, 1991). In such an arrangement, a primary structure deals with exploitative activities and additional secondary structures indulge in exploratory activities (Goldstein, 1985). A single business unit thus addresses the need for both exploitation and exploration.

Sequential antecedents. It uses the logic of differentiation but implies a temporal separation rather than structural separation wherein the organization juggles between periods of exploitative activities and short intervals of exploration (Burgelman, 2002; Siggelkow and Levinthal, 2003). Brown and Eisenhardt (1997) used 'rhythmic switching' to oscillate between exploration and exploitation activities. This process has been referred to as 'vacillation' (Nickerson and Zenger, 2002; Boumgarden et al., 2012). A myriad of studies conclude that sequential ambidexterity is good for smaller firms as they are not resourceful enough to pursue simultaneous ambidexterity (Chen & Katila, 2008; Ramachandran & Lengnick-Hall, 2010; Tempelaar & Van De Vrande, 2012). These studies do not get into the mechanism of how sequential ambidexterity unfolds (O'Reilly and Tushman, 2013) which is also an important element to consider to be able to link the antecedents to the outcome.

Contextual antecedents. Demonstrating adaptability across an entire business unit builds contextual ambidexterity (Gibson and Birkinshaw, 2004). Individual level behaviors are shaped by the organizational context which refers to beliefs, processes and systems (Ghoshal & Bartlett, 1994). Contextual ambidexterity can be achieved by using meta-routines and job enrichment schemes (Adler et al., 1999) or by creating shared vision (Bartlett & Ghoshal, 1989) such that individuals in an organization divide their time between exploitation and exploration.

Leadership-based antecedents. Top management teams and senior executives play a major role in facilitating ambidexterity (Tushman and O'Reilly, 1997). Some studies consider leadership as a supporting factor for contextual and structural ambidexterity while others consider it an independent antecedent (Raisch & Birkinshaw, 2008). The level of behavioral integration (a concept drawn from upper echelon theory) of top management teams influences the members to deal with contradictory processes (Lubatkin, Simsek, Ling & Veiga, 2006).

Outcomes in Terms of Performance

A lot of empirical studies have tried to look at ambidexterity as a performance enhancing variable (Raisch & Birkinshaw, 2008). Firms that maintain a balance between exploration and exploitation perform better than firms that focus on only one (Tushman and O'Reilly, 1996). Since, exploration entails higher risk, uncertainty and long-term results (if at all); pursuing only exploration is not a viable option. On the other hand, only exploitation would mean organizations becoming obsolete (Levinthal and March, 1993) in the long run which is not a viable option either.

Another set of studies claim that pursuing both the activities together could result in inferior firm performance due to lack of focus and internal consistency (Wernerfelt and Montgomery, 1988). The arguments in favor of ambidexterity and the ones against it have led to what is termed as ambidexterity premise (Raisch & Birkinshaw, 2008) which states that both exploration and exploitation are needed for an organization to succeed.

Some empirical studies that test the relation between ambidexterity and performance have been conducted and have argued of a positive correlation in terms of ambidexterity (balance between exploitative and explorative pursuits) with respect to sales growth, profits etc (Adler et al., 1999; Knott, 2002; Katila & Ahuja, 2002; He and Wong, 2004; Gibson and Birkinshaw, 2004; Lubatkin et al., 2006). One of the studies (Venkatraman et al., 2007) found a positive relation between performance and temporal cycling (between exploration and exploitation). Thus, more empirical work needs to be done to arrive at conclusive results with regard to performance in a specific sense and a specific approach to ambidexterity.

Effect of Environmental Variables

A firm's external environment has a major role to play in its performance. The level of dynamism and competitiveness affects organizational ambidexterity (Levinthal & March, 1993; Siggelkow & Levinthal, 2003; Volberda, 1999). The studies that have been done till date can be categorized into three clusters: (a) the environment's direct influence on organizational ambidexterity, (b) the environmental factors' moderating the relation between organizational ambidexterity and firm performance and, (c) the environmental factors' moderating the relation between organizational ambidexterity and its antecedents (Raisch & Birkinshaw, 2008). The three clusters have been summarized in Table 2 and explained in the discussion that follows.

Table 2- Effect of Environmental Variables

Type of effect of environmental variables	Relationships
Environment's direct effect on ambidexterity	dynamic and competitive environment plays a role in making firms ambidextrous
Environment moderating relation between ambidexterity and performance	exploration works better in dynamic environments whereas exploitation works better in a competitive landscape
Environment moderating relation between ambidexterity and its antecedents	contextual ambidexterity favors firm performance in dynamic and competitive environments

The first cluster of studies supports the argument that a more dynamic and competitive environment plays a role in making firms ambidextrous (Levinthal & March, 1993; Floyd & Lane, 2000). In the presence of a highly dynamic environment or a high level of competitiveness, firms try to strike a balance between exploration and exploitation (Jansen, van den Bosch and Volberda, 2005).

The second cluster of studies point out that exploration works better in dynamic environments whereas exploitation works better (financially) in a competitive landscape (Jansen, van den Bosch and Volberda, 2006).

The third cluster has a very few studies to reach any notable conclusion. A study by Jansen et al. (2005) found that contextual ambidexterity favors firm performance in dynamic and competitive environments.

Effects of Other Variables

There are some organizational variables that impact or moderate the relation between organizational ambidexterity and performance. These include market orientation, firm scope and resource endowment. New product performance is positively correlated to ambidexterity in presence of market orientation (Kyriakopoulos and Moorman, 2004). A few studies have pointed out that ambidexterity is contingent upon resource endowment (Ebben and Johnson, 2005; Kyriakopoulos & Moorman, 2004; Venkatraman et al., 2007). The size and the scope of firms impacts the approach to ambidexterity as put forth by Gibson and Birkinshaw (2004) who make a case for contextual ambidexterity for small firms and Lubatkin et al. (2006) who make a case for structural ambidexterity as being better suited for large firms with a diversified scope.

More studies are needed in this domain to reach better and more robust conclusions.

Personal Ambidexterity

In a study by O'Reilly and Tushman (2004), it has been brought forth that ambidextrous organizations in order to be successful require leaders and senior teams to be ambidextrous. This converges with the stream on contextual ambidexterity in the sense that individuals too can be ambidextrous if the organizational culture and processes promote it. Ambidexterity at the individual level is personal ambidexterity. Variations at individual level in terms of characteristics explain how people take up ambidextrous roles (O'Reilly and Tushman, 2004). This therefore is a micro foundational view of organizational ambidexterity (Felin et al., 2012; Foss, 2011) and more studies need to be performed to reach noteworthy conclusions (Turner et al., 2013). The literature has focused on a macro level analysis of balancing exploitation and exploration (Nosella, Cantarello and Filippini, 2012) and has proposed the 3 major conclusive solutions namely structural, temporal/ sequential and contextual ambidexterity (Gupta et al., 2006; Raisch and Birkinshaw, 2008; Raisch et al., 2009).

Based on the relation between perceptions and actual behaviors of individuals towards exploration and exploitation; Bonesso et al. (2014), have classified individual level ambidexterity as enacted personal (perception is to pursue one but behavior is to pursue a balance), dominant learning orientation (perception and behavior both is to pursue one), full personal (perception of these individuals is to pursue a balance of both but their behavior points to them pursuing only one) and perceived personal (both behavior and perception is to pursue a balance of exploration and exploitation).

Related Research Streams

Resource Based View

Firm resources include capabilities, assets, knowledge, processes etc. A firm can use these resources to attain sustained competitive advantage (Amit and Schoemaker, 1993). Barney (1991) points out that a firm with VRIN (Valuable, Rare, Inimitable and Non-Substituable) resources is able to achieve long term success in terms of staying ahead in the competition. Sustained competitive advantage in Barney's study is defined as a value creating strategy in a firm that competitors or potential competitors are not deploying and so it remains even after duplication efforts.

Considering today's scenario duplication may not be very difficult. If a value creating strategy is deployed without any modification or with the prevailing environmental uncertainty, the

strategy may become obsolete in due course; therefore, constant upgradation is required. This is where the role of exploration comes into being but the firm cannot give up on its existing strategy which lies in the domain of exploitation. Thus a balance between exploration and exploitation is needed which may help a firm retain its status quo of running with a sustained competitive advantage.

Dynamic Capabilities

The ability to achieve ambidexterity lies at the core of dynamic capabilities view (Eisenhardt & Martin, 2000; Teece, Pisano, & Shuen, 1997). Dynamic capabilities play a role in the evolution of a firm. Routines are a concept of resource-based view but if the routines do not undergo adaptation they will fail to remain a source of competitive advantage in the future. The research stream that deals with how the routines undergo change and how firms evolve while maintaining a tradeoff between exploitation and exploration is dynamic capabilities (O'Reilly & Tushman, 2008; Taylor & Helfat, 2009).

Learning

The concept of adaptive learning stems from behavioral theory of a firm. The firm is viewed as an experiential learning system that learns from either internal or external sources. From this point of view, exploration is defined as creating a variety of experience while exploitation is about creating reliability in experiences (Levitt and March, 1988). The learning capability of a firm; defined as- the practices that improve intra organizational learning,- positively affects ambidexterity in a firm (Lin et al., 2013). This is one branch of study that might overlap with looking at achieving the perfect balance.

Absorptive Capacity

It is the ability of a firm to assimilate knowledge from the environment and utilize it thereafter. Initially the concept was concerned with R&D activities but later on it was extended to encompass forecasting and creation (Cohen and Levinthal, 1990). Lane et al. (2006) modified the definition and gave it a sequential process form that includes exploratory learning, transformative learning and exploitative learning. According to Zahra and George (2002), absorptive capacity maybe potential or realized; while potential implies exploration, realized implies exploitation. Thus, absorptive capacity affects ambidexterity (Datta, 2011). The relationship between them is to be determined using future studies.

Discussion

After taking into consideration the various studies and reviews performed, it can safely be said that the literature is clear on the definitional aspects of ambidexterity and the firm and individual levels of analysis have been propagated for future research. Determining the relationship of ambidexterity with other related fields might provide a lot of explanation of the phenomenon as well as the mechanism involved behind how ambidexterity takes place and how the balance between exploitation and exploration is maintained might also become clear. The difference between the various approaches of ambidexterity in terms of how they unfold and under what conditions is one better than the other might become clearer. Based on the possible links with other fields, as discussed above, how the fields might aid in understanding how ambidexterity helps a firm in being more innovative and sustainable is proposed.

Proposition 1a- Resource based view and subsequently dynamic capabilities might hold

explanation to how ambidextrous firms (those that maintain a balance between exploration and exploitation) are more innovative.

Proposition 1b- Resource based view and subsequently dynamic capabilities might hold explanation to how ambidextrous firms (those that maintain a balance between exploration and exploitation) are sustainable in the long run.

Proposition 2a- Potential absorptive capacity, might hold explanation to how ambidextrous firms (those that maintain a balance between exploration and exploitation) are more innovative.

Proposition 2b- Realized absorptive capacity, might hold explanation to how ambidextrous firms (those that maintain a balance between exploration and exploitation) are better performing.

Proposition 3- Learning might hold explanation to how firms are able to maintain a balance between exploration and exploitation.

Thus, from a more integrative perspective, the ability to learn and the ability to use the knowledge gained forms a coherent link with both the resource based view and the dynamic capabilities view in terms of being able to explain how these perspectives enable ambidexterity and how ambidexterity then helps in sustaining the firm and helping it retain its competitive advantage by remaining innovative.

Future Scope

The literature abounds in studies that take a macro approach towards ambidexterity and there are few that look at the individual unit of analysis. The initial literature dealt with perceiving ambidexterity as a capability (Nosella et al., 2012). In order to delve deeper into this domain a micro perspective is required. The micro-foundations approach which looks at ambidexterity from the perspective of individuals or leaders as well as the contextual approach to ambidexterity should be made the core of further research as they would investigate how ambidexterity emerges. The level at which ambidexterity emerges needs to be determined and how the actors at that level cope with it also requires further understanding. The ongoing link of ambidexterity with the related streams should be deeply examined in further research to bring forth a better understanding. This involves drilling into dynamic capabilities and how they shape ambidexterity as well as role of learning in organizations to further understand the emergence of ambidexterity. The propositions discussed offer a direction in which future research can expand.

Limitations

The study traces the evolution of the field by starting at the evolution of the term and how it has transformed over the years to be used in the organizational context as it is today, an evolutionary literature review is performed. The field might benefit from a systematic literature review or bibliometric analysis to trace a more structured path and its elements that overlap with other fields.

The study also lacks in a detailed review of the fields that we have presented as linked to ambidexterity in terms of providing a better explanation. Future studies can overcome this limitation by performing a review of these fields.

References

- Adler, P. S., Goldoftas, B., & Levine, D. I. (1999). Flexibility versus efficiency: A case study of model changeovers in the Toyota production system. *Organization Science*, 10: 43-68.
- Amit, R., & Schoemaker, P. J. (1993). Strategic assets and organizational rent. *Strategic Management Journal*, 14(1), 33-46.
- Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99-120.
- Bartlett, C. A., & Ghoshal, S. (1989). *Managing across borders: The transnational solution*. Cambridge, MA: Harvard Business School Press.
- Beckman, C. M. (2006). The influence of founding team company affiliations on firm behavior. *Academy of Management Journal*, 49(4), 741-758.
- Benner, M. J., & Tushman, M. L. (2003). Exploitation, exploration, and process management: The productivity dilemma revisited. *Academy of Management Review*, 28(2), 238-256.
- Bonesso, S., Gerli, F., & Scapolan, A. (2014). The individual side of ambidexterity: Do individuals' perceptions match actual behaviors in reconciling the exploration and exploitation trade-off?. *European Management Journal*, 32(3), 392-405.
- Boumgarden, P., Nickerson, J., & Zenger, T. R. (2012). Sailing into the wind: Exploring the relationships among ambidexterity, vacillation, and organizational performance. *Strategic Management Journal*, 33(6), 587-610.
- Brown, S. L., & Eisenhardt, K. M. (1997). The art of continuous change: Linking complexity theory and time-paced evolution in relentlessly shifting organizations. *Administrative Science Quarterly*, 1-34.
- Burgelman, R. A. (2002). Strategy as vector and the inertia of co-evolutionary lock-in. *Administrative Science Quarterly*, 47(2), 325-357.
- Bushe, G. R., & Shani, A. B. (1991). *Parallel learning structures*. Reading, MA.
- Can Training to Become Ambidextrous Improve Brain Function? (2013). Retrieved December 11, 2016, from <https://www.scientificamerican.com/article/can-training-to-become-ambidextrous-improve-brain-function/>
- Chen, E. L., & Katila, R. (2008). Rival interpretations of balancing exploration and exploitation: simultaneous or sequential. *Handbook of Technology and Innovation Management*, 1.
- Cohen, WM and DA Levinthal (1990). Absorptive capacity: A new perspective on learning and innovation. *Administrative Science Quarterly*, 35(1), 128-152.
- Datta, A. (2011). Combining networks, ambidexterity and absorptive capacity to explain commercialization of innovations: a theoretical model from review and extension. *Journal of Management & Strategy*, 2(4).
- Duncan, R. (1976). The ambidextrous organization: Designing dual structures for innovation. Killman, R. H., L. R. Pondy, and D. Sleven (eds.). *The Management of Organization*. New York: North Holland. 167-188.
- Ebben, J. J., & Johnson, A. C. (2005). Efficiency, flexibility, or both? Evidence linking strategy to performance in small firms. *Strategic Management Journal*, 26(13), 1249-1259.
- Eisenhardt, K. M., & Martin, J. A. (2000). Dynamic capabilities: what are they?. *Strategic Management Journal*, 21(10-11), 1105-1121.
- Felin, T., Foss, N. J., Heimeriks, K. H., & Madsen, T. L. (2012). Microfoundations of routines and capabilities: Individuals, processes, and structure. *Journal of Management Studies*, 49(8), 1351-1374.

- Floyd, S. W., & Lane, P. J. (2000). Strategizing throughout the organization: Managing role conflict in strategic renewal. *Academy of Management Review*, 25(1), 154-177.
- Foss, N. J. (2011). Why micro-foundations for resource-based theory are needed and what they may look like. *Journal of Management*, 37(5), 1413-1428.
- Ghoshal, S., & Bartlett, C. A. (1994). Linking organizational context and managerial action: The dimensions of quality of management. *Strategic Management Journal*, 15(S2), 91-112.
- Gibson, C. B., & Birkinshaw, J. (2004). The antecedents, consequences, and mediating role of organizational ambidexterity. *Academy of Management Journal*, 47(2), 209-226.
- Goldstein, S. G. (1985). Organizational dualism and quality circles. *Academy of Management Review*, 10: 504-517.
- Gupta, A. K., Smith, K. G., & Shalley, C. E. (2006). The interplay between exploration and exploitation. *Academy of Management Journal*, 49(4), 693-706.
- He, Z. L., & Wong, P. K. (2004). Exploration vs. exploitation: An empirical test of the ambidexterity hypothesis. *Organization Science*, 15: 481-494.
- Is Ambidexterity A Good Or Bad Thing? (2016). Retrieved December 11, 2016, from <https://www.theodysseyonline.com/ambidexterity-good-or-bad>
- Jansen, J. J., Van Den Bosch, F. A., & Volberda, H. W. (2005). Managing potential and realized absorptive capacity: how do organizational antecedents matter?. *Academy of Management Journal*, 48(6), 999-1015.
- Jansen, J. J., Van Den Bosch, F. A., & Volberda, H. W. (2006). Exploratory innovation, exploitative innovation, and performance: Effects of organizational antecedents and environmental moderators. *Management Science*, 52(11), 1661-1674.
- Katila, R., & Ahuja, G. (2002). Something old, something new: A longitudinal study of search behavior and new product introduction. *Academy of Management Journal*, 45(6), 1183-1194.
- Knott, A. M. (2002). Exploration and exploitation as complements. *The Strategic Management of Intellectual Capital and Organizational Knowledge*, 339-358.
- Kyriakopoulos, K., & Moorman, C. (2004). Tradeoffs in marketing exploitation and exploration strategies: The overlooked role of market orientation. *International Journal of Research in Marketing*, 21(3), 219-240.
- Lane, PJ, BR Koka and S Pathak (2006). The reification of absorptive capacity: A critical review and rejuvenation of the construct. *Academy of Management Review*, 31(4), 833-863.
- Lawrence, P. R., & Lorsch, J. W. (1967). Differentiation and integration in complex organizations. *Administrative Science Quarterly*, 1-47.
- Levinthal, D. A., & March, J. G. (1993). The myopia of learning. *Strategic Management Journal*, 14(S2), 95-112.
- Levitt, B., & March, J. G. (1988). Organizational learning. *Annual Review of Sociology*, 319-340.
- Lewis, M. W. (2000). Exploring paradox: Toward a more comprehensive guide. *Academy of Management Review*, 25: 760-777.
- Lin, H. E., McDonough III, E. F., Lin, S. J., & Lin, C. Y. Y. (2013). Managing the exploitation/exploration paradox: The role of a learning capability and innovation ambidexterity. *Journal of Product Innovation Management*, 30(2), 262-278.
- Lubatkin, M. H., Simsek, Z., Ling, Y., & Veiga, J. F. (2006). Ambidexterity and performance in small-to medium-sized firms: The pivotal role of top management team behavioral integration. *Journal of Management*, 32(5), 646-672.

- March, J. G. (1991). Exploration and exploitation in organizational learning. *Organization Science*, 2(1), 71-87.
- Nickerson, J. A., & Zenger, T. R. (2002). Being efficiently fickle: A dynamic theory of organizational choice. *Organization Science*, 13(5), 547-566.
- Nosella, A., Cantarello, S., & Filippini, R. (2012). The intellectual structure of organizational ambidexterity: A bibliographic investigation into the state of the art. *Strategic Organization*, 10(4), 450-465.
- O'Reilly, C. A., & Tushman, M. L. (2004). The ambidextrous organization. *Harvard Business Review*, 82(4), 74-81.
- O'Reilly III, C. A., & Tushman, M. L. (2008). Ambidexterity as a dynamic capability: Resolving the innovator's dilemma. *Research in Organizational Behavior*, 28, 185-206.
- O'Reilly III, C. A., & Tushman, M. L. (2013). Organizational ambidexterity: Past, present, and future. *Academy of Management Perspectives*, 27(4), 324-338.
- Online Etymology Dictionary. (n.d.). Retrieved December 11, 2016, from <http://www.etymonline.com/index.php?term=ambidextrous>
- Raisch, S., & Birkinshaw, J. (2008). Organizational ambidexterity: Antecedents, outcomes, and moderators. *Journal of Management*, 34(3), 375-409.
- Raisch, S., Birkinshaw, J., Probst, G., & Tushman, M. L. (2009). Organizational ambidexterity: Balancing exploitation and exploration for sustained performance. *Organization Science*, 20(4), 685-695.
- Ramachandran, I., & Lengnick-Hall, C. A. (2010). Multidimensional and dynamic ambidexterity configurations: Rethinking the question of balance. In *Annual Meetings of the Academy of Management, Montreal*.
- Siggelkow, N., & Levinthal, D. A. (2003). Temporarily divide to conquer: Centralized, decentralized, and reintegrated organizational approaches to exploration and adaptation. *Organization Science*, 14(6), 650-669.
- Smith, W. K. (2006). Top management team approaches to simultaneously managing exploration and exploitation. *Academy of Management Best Conference Paper Proceedings, 2006*
- Smith, W. K., & Tushman, M. L. (2005). Managing strategic contradictions: A top management model for managing innovation streams. *Organization Science*, 16(5), 522-536.
- Taylor, A., & Helfat, C. E. (2009). Organizational linkages for surviving technological change: Complementary assets, middle management, and ambidexterity. *Organization Science*, 20(4), 718-739.
- Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal*, 509-533.
- Tempelaar, M. P., & Van De Vrande, V. (2012, July). Dynamism, munificence, internal and external exploration-exploitation and their performance effects. In *Academy of Management Proceedings* (Vol. 2012, No. 1, p. 16656). Briarcliff Manor, NY 10510: Academy of Management.
- Thompson, J. D. (1967). *Organizations in action: Social sciences bases of administrative theory*. New York: McGraw-Hill.
- Turner, N., Swart, J., & Maylor, H. (2013). Mechanisms for managing ambidexterity: A review and research agenda. *International Journal of Management Reviews*, 15(3), 317-332.
- Tushman, M. L., & O'Reilly, C. A. (1996). The ambidextrous organizations: Managing evolutionary and revolutionary change. *California Management Review*, 38(4), 8-30.

- Tushman, M. L., & O'Reilly, C. A. (1997). *Winning through innovation: A practical guide to managing organizational change and renewal*. Cambridge, MA: Harvard Business School Press.
- Venkatraman, N., Lee, C. H., & Iyer, B. (2007). Strategic ambidexterity and sales growth: A longitudinal test in the software sector. Unpublished Manuscript (earlier version presented at the Academy of Management Meetings, 2005).
- Volberda, H. W. (1999). *Building the flexible firm: How to remain competitive*. Oxford university press.
- Wernerfelt, B., & Montgomery, C. A. (1988). Tobin's q and the importance of focus in firm performance. *The American Economic Review*, 246-250.
- Zahra, S. A., & George, G. (2002). Absorptive capacity: A review, reconceptualization, and extension. *Academy of Management Review*, 27(2), 185-203.
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