

Linking Ambidextrous Learning with Organizational Performance: Critical Review of Literature and a Research Agenda

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Abstract

Modern organizations are confronted with the dilemma of ensuring effectiveness and efficiency in management of current operations while at the same time adapting to the dynamics of business environment for future viability. Achieving a balance in this paradigm requires organizations to be ambidextrous. Research on ambidexterity is inconclusive with studies giving divergent and even contradictory results particularly on the configuration and conceptualization of the dimensions of ambidextrous learning and their effect on organizational performance. This paper, therefore, makes a critical review of literature on the linkage between ambidextrous learning and organizational performance and proposes a conceptual framework and research methodology for future research.

Keywords: Ambidextrous learning, employee ambidexterity, exploitative learning, exploratory learning, innovative work behaviour, environmental dynamism, organizational performance.

1. Introduction

To survive and thrive in a dynamic business context, organizations need to be effective by being flexible and innovative. To achieve this level of effectiveness, there is an ever increasing demand for organizations to be ambidextrous, that is, exploit current capabilities and explore new opportunities (Cao, Gedajlovic & Zhang, 2009; Li, Wei, Zhao, Zhang & Liu, 2013; Mei, 2014; Ajayi, Odusanya & Morton, 2017). Ambidexterity suggests an alignment and efficiency in management of current operations while at the same time adapting to the dynamics of business environment (March, 1991). This makes ambidexterity an organizational learning component.

Research on organizational ambidexterity studies that focus on its linkage with human resource management (HRM) dimensions is scarce (Junni *et al.*, 2015). Empirical studies have not filled the void on how HRM soft and hard dimensions support ambidexterity for firm performance (Ketkar & Puri, 2017). Despite the prominence of research on ambidextrous organizational learning and organizational performance, extant literature is inconclusive on the influence of exploratory learning and exploitative learning on firm performance, with arguments revolving around the compatibility of the concepts and their seemingly contradictory nature (Katila & Ahuja, 2002; Gibson & Birkinshaw, 2004; Li, *et al.*, 2010; Li, *et al.*, 2013). Some scholars argue that the effects of exploratory learning and exploitative learning on firm performance differs (Katila & Ahuja, 2002; Auh & Menguc, 2005; Atuahene-Gima & Murray, 2007; Li, *et al.*, 2010). Raisch and Birkinshaw (2008) have invited discussions on how both can be achieved simultaneously.

We respond to this call through a comprehensive review and critique of literature on ambidextrous learning and performance, paying a close attention to employee ambidexterity. Employee ambidexterity as an orientation that is behavioural (Mom, *et al.* 2009). Patel, *et al.* (2013) advances the concept by postulating that employee ambidexterity is contextual and that high performance work systems promote behavioural climate that nurtures ambidexterity at employee-level. Increasingly, there are calls for research that explores ambidexterity at the employee level (Birkinshaw & Gupta, 2013). Ambidextrous activities of a firm should be studied and understood within the micro and macro contexts they operate in (Baker & Sinkula, 2007; Jiang & Li, 2008; Li, *et al.* 2013). Therefore, we seek to examine how different contexts impact the relationship between exploratory learning and exploitative learning and organizational performance. Similarly, the antecedents and moderators of the relationship between ambidextrous learning and organizational performance has not fully been exhausted since only environmental exigencies, resource flexibility and management ties remain the factors studied in ambidexterity literature (Lee & Huang, 2012; Mei, 2014; Gomes & Wojahn, 2016).

This study, therefore, establishes the contextual and conceptual gaps in determining the ambidextrous learning and performance architecture and framework and recommend a conceptual framework. The paper is organized as follows: the next section presents literature review, research gaps, recommendations for future research and conclusion.

2. Literature Review

2.1 Theoretical Review of Ambidextrous Learning

Ambidextrous learning owes its theoretical underpinnings to the seminal work of March (1991) in which he categorized ambidextrous learning into exploratory learning and exploitative learning and further advanced that

they were key determinants of innovative performance. March's (1991, 1996) view that firms should pursue both exploratory and exploitative learning simultaneously has been echoed by studies of Katila and Ahuja (2002) and Raisch and Birkinshaw, (2008). This view is contrary to earlier works by Hannan & Freeman (1977) and Miller and Friesen (1986) which viewed the two concepts of exploratory and exploitative learning as contradictory and hence could not be practiced simultaneously in the organization.

In the development of the concepts of exploratory learning and exploitative learning, March (1991) advanced the dichotomy of ambidexterity to the current acceptable view: exploration to include elements of search, variation, experimentation, and discovery; and exploitation to include elements of refinement, efficiency, selection, and implementation. This dichotomy, therefore, demands an organizational adjustment (alignment and adaptation) in terms of structure, strategy and context (Raisch & Birkinshaw, 2008). Advancing similar observation, Katila and Ahuja (2002), assert that exploratory learning activities entail the application of new knowledge while exploitative learning activities involve reusing the existing knowledge. This viewpoint suggests that exploratory learning and exploitative learning are fundamentally different in terms of knowledge acquisition and utilization. This view is reaffirmed by McGrath (2001) who argues that exploratory learning is geared towards activities that are not reliant on existing knowledge but on new knowledge that may only exist externally.

However, as much as there is consensus on the configuration of the concept of ambidextrous learning, existing literature suggests divergent views on the effect of exploratory learning and exploitative learning on firm performance (Raisch & Birkinshaw, 2008; Li, *et al.* 2013). Some studies argue that exploratory learning and exploitative learning compete for the scarce organizational resource which ultimately make them inherently incompatible while other scholars hold the view that postulating a combination and / or balance between exploitation and exploration is achievable and beneficial (March, 1991; Tushman & O'Reilly, 1996; Gibson & Birkinshaw, 2004; Li, *et al.*, 2013). Extending the debate, some scholars (e.g. Auh & Menguc, 2005; Atuahene-Gima & Murray, 2007) argue that exploratory learning and exploitative learning may have different effects on performance (Li *et al.*, 2013). Katila and Ahuja (2002) argue that exploratory and exploitative learning have different knowledge-processing capabilities. Further, extending the debate, Raisch, *et al.*, (2009) in agreement with March (1991, 1996) calls for firms to maintain a balanced combination or integration of exploratory learning and exploitative learning activities by leveraging the existing knowledge and searching new knowledge domains. Similar sentiments were shared by Tushman and O'Reilly (1996) in the argument that a well-balanced combination and simultaneous integration of exploration and exploitation activities was critical for the survival, stability and growth of any organization in a dynamic business environment. However, the lingering question remains: how can this balance and trade-off be achieved?

To emphasize on the need for a balanced implementation of ambidextrous learning, Levinthal and March (1993) argue that any unbalanced orientation on either exploration or exploitation may lead to dire consequences on the organization. For instance, a leaning towards exploratory learning exhausts financial resources which may lead to liquidity problems as the benefits may take time to be realized. In resonance, Auh and Menguc (2005) argue that firms risk the short-term profitability if they singularly focus on exploratory learning at the expense of exploitative learning. This may threaten the stability of the firm. On the flipside, overemphasizing exploitative learning places constraints and chokes exploratory learning which is fundamental in innovation. This also may risk the ability of the organization to respond to changes in the environment (March, 1991; Levinthal & March, 1993; Auh and Menguc, 2005). To overcome this trap, Levinthal and March (1993) opine that firms should engage only on sufficient exploitation for a firm's current sustainability and sufficient exploration for a firm's future sustainability. This study is underpinned by the organizational learning ambidexterity theory. The theory aptly explains the concepts of exploratory and exploitative learning and their application. The theory also forms a foundation upon which the framework for building the relationship between ambidextrous learning and performance.

The knowledge-based perspective views knowledge as the most important resource instrumental in organizational competitiveness and innovative capabilities and leadership owing to the rarity and inimitable nature of knowledge (Drucker, 1986, Grant, 1996). Modern organizations have become learning organizations, knowledge has become the foremost sought after resources for differentiation and competitiveness (Kohtama^{ki}, *et al.*, 2010; Rhee, *et al.*, 2010). Empirical evidence points to the positive influence of knowledge stock on ambidextrous learning and on organizational outcomes (Ahn & Chang, 2004; Lee & Huang, 2012). Knowledge stock or knowledge capital is an antecedent of ambidextrous learning (Lee & Huang, 2012). Katila and Ahuja (2002) acknowledging the significance of knowledge in ambidexterity, argues that exploratory learning and exploitative learning ensue from different knowledge processing paths.

Furthering Grants (1996) argument of the significance of knowledge in organizational outcomes, it can be said that a firm's knowledge capacity transcends an organization's system; that is, its operations, technology, human resources and all facets of the organization. This perspective, therefore, claims that knowledge is at the centre of learning in every organization as scholars have postulated over the years (Teecce *et al.*, 1997; Katila & Ahuja, 2002; Lee & Huang, 2012). In advancing this theoretical posturing Lin, *et al.* (2006) opines that new

knowledge acquisition is facilitated by the existing knowledge. Wadhwa and Kotha (2006) shares the same sentiments in the assertion that prior knowledge is precursor of continuous learning. These arguments support the possibility of creating a balance of combination between exploratory and exploitative learning. This is because exploitative learning relies on existing knowledge while exploratory learning relies on new knowledge as supported by earlier postulations of Cohen and Levinthal (1990) and later by Lee and Huang (2012) that existing knowledge is the bedrock of new knowledge as it guides the way new information and knowledge is manipulated.

From the preceding argument it can be deduced that new knowledge, after acquisition, sharing and utilization in line with the learning assimilation theory, becomes part of the knowledge stock or capital. In addition, the existing knowledge influences the type of knowledge to be pursued for innovation and guides engagement between the exploratory and exploitative learning (Katila & Ahuja, 2002; Smith *et al.* 2005; Lee & Huang, 2012). Clarifying on the role of knowledge in ambidexterity, Lee and Huang (2012) argues that knowledge stock provides the elements that cements the impact of ambidextrous learning on firm performance. Based on the knowledge-based view (KBV), innovative work behaviour originates from a firm's learning capability and knowledge stock, learning assimilation capacity are indicators of innovative capabilities in the organization (Cohen & Levinthal (1990). Building on this premise, Nonaka (1994) avers that knowledge streams and learning are mainstay of innovation processes. Leonard-Barton (1995) contends that knowledge and firm's learning capabilities are the cornerstones of a sustainable innovation practices in organizations. However, Grant (1996) advances that learning and knowledge integration differs from firm to firm in terms of efficiency, scope, and flexibility. According to Kohtamaäki *et al.* (2010), learning and innovative behaviours are influenced by firm's characteristics such as size, age among others.

The theory helps explain the relationship between ambidextrous learning and innovative behaviour and innovative behaviour and performance. Scholars across a span of three decades have affirmed the critical role of knowledge in innovation in products, building learning capabilities, innovative processes and culture, and general organizational performance (March, 1991; Nonaka, 1994; Katila & Ahuja, 2002; Kohtamaäki *et al.*, 2010). Therefore, the study proposes knowledge-based perspective as one of the key theories that builds the theoretical framework on the link between ambidextrous learning, innovative work behaviour and performance. That is, the theory explains the relationship between variables: the independent variables (exploitative and exploratory learning), mediating variable (innovative work behaviour), and dependent variable (organizational performance).

Assimilation learning theory propounded by Nevis, DiBella, and Goulds' (1995) advances three stages in the learning process: the first stage is called the knowledge acquisition which comprise the development of skills, insights and relationships; the second stage is the knowledge sharing which is involve dissemination of the learning in terms of knowledge and skills; and the third stage which is knowledge utilization and constitutes the integration of learning in the organizational processes. In addition, Nevis, *et al* (1995) proposes seven learning orientations that describe the methods and personal characteristics which determine the learning process. These orientations are: knowledge source which describes whether knowledge is created internally or acquired externally; product-process focus, focusing on organization's products and processes of production and product development; documentation mode which focuses on knowledge stock repository at individual and organizational levels; dissemination mode which comprise knowledge sharing methods including formal and informal methods; learning focus which entails the objective of learning either incremental or transformative; value-chain focus constitutes decisions on whether to invest in designing and developing or marketing and delivering; and skill development of employees.

The assimilation learning theory is strongly linked to the KBV perspective as it explains the process in which knowledge is acquired, shared and integrated, and utilized in the organization. The study proposes this theory to explain the study variables exploratory and exploitative learning and innovative work behaviour in the model of the link between ambidextrous learning and performance.

The dynamic resource management view responds to March (2006) who decried the deficiency in past studies in providing direction on how firms should flexibly reconfigure resource portfolios for organizational ambidexterity. In his earlier studies March (1991, 1996) and contemporaries focused only on the scarcity of resources to sustain exploitative learning and exploratory learning and completely ignored the possibilities of resource management and portfolio management for complementary efforts of ambidexterity. Cao, *et al.* (2009) only focused on the resource accessibility and ignored resource dynamism (Wei, *et al.* 2013). In a rejoinder to March (2006), Alvarez and Barney (2007) postulates that resource endowment should not constrain organizations pursuit of ambidextrous learning because firms can escape this resource trap by creating heterogeneous resources. According to Zhou and Wu (2010), the dynamic resource management view holds that firms gain value through bundling and leveraging resource portfolios (Wei, *et al.* 2013).

Resource portfolio is achieved by a firm investing in new resources, enhancing the capacity of internal resources by developing them, and creating new bundles of resources (He & Wong, 2004; Wei, *et al.* 2013). In

addition, the dynamic resource management perspective illuminates the understanding of the complementary view. The complementary view proposes that firms should take advantage of the unique features of exploratory learning and exploitative learning by bundling resources to realize the complementary effects of ambidexterity (He & Wong, 2004; Cao *et al.*, 2009; Wei, *et al.* 2013). This view or perspective explains the moderating effect of dynamic resource management capabilities in the ambidextrous learning and performance relationship. Advancing this view is Zhou and Wu (2010) suggest the need for coordination flexibility in the management of scarce resources in order to create synergistic impact necessary for ambidextrous learning. The dynamic resource management perspective holds that resource flexibility has a moderating effect on the relationship between learning ambidexterity and performance (Cao *et al.*, 2009; Zhou & Wu, 2010). From this theoretical dilemma, Sirmon *et al.* (2011) calls for more research to focus on how firms can dynamically structure, bundle, and leverage scarce organizational resources to benefit from ambidextrous learning. The dynamic resource management theory forms part of the theoretical framework of this study as it explains the effect of resource flexibility in the relationship between ambidextrous learning and performance.

Ability, Motivation and Opportunity (AMO) theory advanced by Appelbaum, Bailey, Berg and Kalleberg (2000) has become a fundamental theory in recent HRM literature. The AMO theory proposes that the firm's performance is a product of employee outcomes highlighted by employee attitudes to perform, employee motivation to perform and employees' opportunity to contribute to organizational goals (Appelbaum *et al.*, 2000; Macky and Boxall, 2007; Zhang, *et al.* 2014). The theory postulates that it is the employee's attitudes and resultant behaviour that directly influence how organizations systems impacts firm performance. This view holds that employee outcomes are critical to a firm performance (Zhang, *et al.* 2014). AMO theory postulates that organization's culture and climate as characterized by HR strategies, policies, systems and practices should focus on enhancing employee outcomes through developing employees' ability to perform, improving employees' motivation to perform and creating opportunities for employees to make contributions to organizational goals. Enhanced employee outcomes (in terms of skills, attitude, motivation and behaviour) leads to enhanced organizational outcomes (Appelbaum, *et al.*, 2000; Boselie, *et al.*, 2005; Macky and Boxall, 2007; Katou & Budhwar 2010; Zhang, *et al.* 2014).

Macky and Boxall (2007) argue that within the AMO framework, employee's ability determines the extent of performance, motivation of employees influences the extent to which the employee exert themselves within their abilities, and opportunity involves the chances the ability of the motivated employees to immerse themselves to perform as per the requirements of their roles and standards of performance set. This theory promotes an organizational climate that is performance-oriented with support and autonomy at the core. These are key elements in an ambidextrous environment (Zhou and Wu, 2010). Therefore, the study advances the adoption of this theory to explain employee behavioural outcomes which mediates the relationship between ambidextrous learning and performance.

The innovative work behavior (IWB) perspective views innovation at an individual level with particular focus on personality characteristics, personal outputs, and behaviour. Hurt, Joseph, and Cook (1977), for instance, focused on employees' readiness as integral to individual innovation goal. On the other hand, West's (1987) focused on employees output in terms of innovative attempts registered and initiatives undertaken by current jobholder in comparison to the previous holder. In similar design Axtell, *et al.* (2000) assessed individual innovative effort in terms of the innovations realized. However, (Scott & Bruce (1994) had a different conceptualization of employee innovation as constituting intentional and discretionary behaviours of individual employee, which points to personality attributes of the employee in relation to innovative efforts. Innovative work behaviour is critical to a firm's sustained performance and competitiveness. Fostering innovative culture is hinged on effective organizational learning, particularly exploratory learning (Gibson & Birkinshaw, 2004; Mei, 2014). However, the intriguing question is to establish the determinants of firms learning and innovation capabilities (Mei, 2014).

Advancing the IWB perspective Janssen (2000) and Jong and Hartog (2008) argue that employees at individual level have to be willing and have capacity to innovate for there to be sustainable and continuous flow of innovative streams. In line with this, this study focuses on building a link between learning, innovation work behaviour and performance. Innovative work behaviour is acknowledged as a mediator between ambidextrous learning and organizational performance. Therefore, this study adopts the innovative work behaviour view to advance the indicators and measures of IWB and explain the mediating role of innovative work behaviour on the relationship between ambidextrous learning and performance.

2.2 Empirical Review

2.2.1 Ambidextrous Learning and Performance

A review of empirical literature on ambidextrous learning and organizational performance reveals a mixed basket of results. There has been a multiplicity of research approaches, conceptualizations and theoretical leanings adopted by various scholars to study the concepts of organizational ambidexterity, ambidextrous

learning and organizational performance. As attested by Patel, *et al.* (2013), consensus has only been built around the significance of ambidexterity on performance, with divergence emanating from theoretical posturing, conceptualization of the model and methodological approaches. There has also been a growing departure on theoretical standpoint of earlier studies to recent studies; with earlier studies leaning towards the incongruence and incompatibility of exploratory learning and exploitative learning and recent studies advocating for complementarity and balance of the two concepts (Raisch & Birkinshaw, 2008). Therefore, this study broadens and deepens the discussion on ambidextrous learning and performance by reviewing and critiquing empirical literature to shed more light on this contentious topic.

This study is illumined by assertions of March (1991) and Patel, *et al.* (2013) that organizational learning facilitates ambidexterity, which results in better firm performance and Gibson and Birkinshaw's (2004) declaration that organizational performance can be enhanced by building behavioural and contextual ambidexterity that allow alignment and adaptability through exploratory and exploitative learning activities. These views are emphasized by the study of Li, *et al.* (2013) on ambidextrous organizational learning and new product performance which found that exploratory learning has positive effect on performance while exploitative learning has an indirect relationship with new product development. However, a further empirical evidence reveal a mixed results on the effects of ambidextrous learning on performance; For instance, Gibson and Birkinshaw (2004) found a positive relationship; Atuahene-Gima (2005) found a negative association; Lin, Yang, and Demirkan (2007) found contingent effect; and Venkatraman, Lee, and Iyer (2007) found no relationship between the study variables. This divergence of findings begs the question: What explains the difference?

This study responds to the above hypothetical question by reviewing and critiquing conceptual models (study variables and their operationalization) and methodological approaches (research designs, sampling strategies and data analysis methods) adopted in similar studies to explain the differences, draw conclusions and identify gaps in the empirical literature. It is evident in empirical literature that the conceptual framework for studying the relationship between ambidextrous learning and performance is not direct. Several studies have used intervening variables (e.g. Lee, *et al.*, 2004; Lee & Huang, 2012; Li, *et al.*, 2013; Lee, *et al.* 2013; Wei, *et al.*, 2013). A few studies that have ignored the moderating or mediating influences have found varying results (e.g. Gomes & Wojahn, 2016; Sutanto, 2016).

Using a conceptual framework with multiple moderators, Li, *et al.* (2013) investigated the way in which environmental factors and managerial ties moderated the linkage between exploratory learning and exploitative learning on new product performance. The results show that environmental munificence strengthens the effect of exploratory learning on new product performance while it weakens that of exploitative learning. Management ties had influence on both forms of learning. Similar conceptualization of variables was used by Lee, *et al.* (2004) where environmental dynamism moderated the relationship between ambidextrous learning and performance found to have significant influence.

Exploring the moderating effect of firm size on the relationship between ambidextrous learning and performance, there is consensus in empirical literature to support the argument that large firms than smaller firms achieve higher performance related to exploratory learning and exploitative learning (Lee, *et al.*, 2004; Lee & Huang, 2012). Lee, *et al.* (2004) aver that large firms with ambidextrous learning perform better than small ambidextrous firms. In concurrence, Lee and Huang (2012) argue that larger firms are poised to gain more value from ambidextrous learning than smaller firms because they are able to achieve balance and simultaneity in engagement of exploration and exploitation. However, Gomes and Wojahn (2016) studies reveal that the organizational learning influences the innovation in SMEs. Ajayi, *et al.* (2017) study reveal that SMEs with the appropriate organisational contexts for employee ambidexterity and employee engagement will increase their potential for growth and survival. From the foregoing, it is indicative that literature is inconclusive on the effect of firm size on ambidextrous learning and performance, therefore, there is urgent need for more studies to delve into studying the effect of firm size, in different contexts, on ambidextrous learning and performance. The study can be extended to include other firm characteristics such as age and research intensity.

Continuing the debate on conceptual modeling of ambidextrous learning and performance framework, empirical studies have considered resource endowment and flexibility as a moderator. Wei, *et al.* (2013) avers that resource flexibility has positive moderating effects on the relationships between the two dimensions of ambidexterity and performance. Furthering the empirical debate on the influence of resources availability, the discussions flow into the argument about balance and complementarity of exploratory learning and exploitative learning due to scarcity of organizational resources (Tushman & O'Reilly, 1996; Raisch & Birkinshaw, 2008). This argument is founded on the assumption that the two dimensions of ambidextrous learning compete for same resources. March (1991) posits that firms should ensure an optimal mix or balance of exploratory learning and exploitative learning to harness the short term financial benefits and attain long term rewards of innovation and exploration. According to Zhou and Wu (2010), firms gain value through bundling and leveraging resource portfolios in the management of scarce resources in order to create synergistic impact necessary for ambidextrous learning and consequently enhanced organizational performance. It is evident from the above

discussion that the question of balance and optimal mix of exploratory learning and exploitative learning in face of scarce resources still lingers and the debate continues, which calls for more studies to help bridge the knowledge gap.

Organizational climate poses a great empirical discussion because of its conceptual and contextual nature. Empirical findings reveal that a firm's context, in terms of organizational climate, has an effect on knowledge acquisition, sharing and organizational ambidexterity activities. A positive organizational climate characterized by trust, cooperation, leadership support, information sharing, job autonomy, decision making, interaction, and team work will positively impact ambidextrous learning for improved organizational performance (Gibson & Birkinshaw, 2004; Collins & Smith, 2006). A climate of trusted interactions, autonomy, exchange of ideas and support is critical in inculcating innovative behaviour (Collins & Smith, 2006). Bowen and Stroff (2004) argue that organizational addresses the vulnerabilities confronting a firm. It is the positive climate alluded to earlier that creates a context for employees to freely share and exploit knowledge and pursue new knowledge. Such a climate forms an environment conducive for ambidextrous behaviour, with contradictory undertakings (Dirks & Ferrin, 2001).

Studies by various scholars conclude that ambidextrous organizational learning should be supported with firm-level climate that is characterized by job and role autonomy, trust, collaboration, shared codes and values, managerial support, and communication flow so as to build an organizational context that is conducive for exploratory learning and exploitative learning either simultaneously or singularly, a context that supports creative ideas and innovative behaviours to flourish, and a context that creates room for knowledge assimilation (Howell, *et al.*, 1996; Nahapiet & Ghoshal, 1998; Collins & Smith, 2006). Organizational climate pervades all firm levels and its contextual impact is critical in fostering effectiveness of knowledge transfer and learning process (Gibson & Birkinshaw, 2004; Collins & Smith, 2006). Therefore, it is evident from empirical literature that organizational climate has effect on ambidextrous learning, knowledge assimilation, innovative behaviour and ultimately firm performance.

The human relations model has formed the basis for measurement of organizational climate since the 1970s as attested by Lawler and Weick (1970) dimensions of organizational climate which include employee autonomy, control level, rewards, employee involvement and consideration, and support. Other scholars over the decades influenced by the human relations model have considered the following measures: employee welfare, job and employee autonomy, employee participation, communication, decision making, trust and cooperation, and leadership support (e.g. Guest, 1998; Huselid, 1998; Gibson & Birkinshaw, 2004; Sun, *et al.*, 2007; Becker & Huselid, 2011; Patel, *et al.*, 2013). This study examines organizational climate as a moderator of the relationship between ambidextrous learning and performance and adapts the human relations model as the basis for identification of the measures of organizational climate.

Empirical literature has advanced innovative work behaviour and innovative capabilities as mediators of the link between ambidextrous learning and performance. Innovative work behaviour is critical to organizational sustained performance, future survival, and competitive advantage in the present (Janssen 2000). According to Keskin (2006), innovation has a positive effect on the organizational performance. It is argued by (March 1991) that organizational learning has a positive influence on innovative activities. A firm's innovative capability, which resides in its people, is driven by organizational learning. Ambidextrous learning shapes the extent of a firm's innovative activities (He & Wong, 2004; Cao, *et al.*, 2009; Mei, 2014). According to Caniels and veld (2016), innovative behaviour is influenced by a balance of ambidextrous activities. Gibson and Birkinshaw (2004) extends the debate by asserting that innovative work behaviour is higher among employees who engage in exploratory and exploitative learning. Individual employees who engage in ambidextrous activities achieve optimum performance derived from innovative work behaviour (Rosing, *et al.*, 2011).

However, achieving a high level of innovation depends on the organizational climate, individual employee willingness, learning introduced in the organization and resources dedicated to innovation agenda (Janssen, 2000; Jong & Hartog, 2008). This explains to some extent the reasons why some firms are better at learning and innovation than others. To understand individual innovation, there is need to conceptualize innovation at employee level as a discretionary employee behaviour which is influenced by personality attributes rather than a general organizational attribute (Scott & Bruce, 1994). Therefore, the role of the firm is to build a climate that is supportive of innovation (Janssen, 2000). The main indicators of IWB as advanced by Scott and Bruce (1994) and promoted by Janssen (2000) include opportunity exploration, idea generation, championing and application behaviors. IWB encompasses activities such as generation of new and creative ideas, application of new knowledge, creating support for the new ideas, and implementation of the new ideas (Scott & Bruce, 1998; Jansen, 2000). The operationalization of the innovative work behaviour in extant literature is premised on the indicators promoted by Scott and Bruce (1994, 1998) and Janssen (2000).

This study focuses on building a link between ambidextrous learning, innovative work behaviour and performance. Innovative work behaviour, therefore, play a mediating role between ambidextrous learning and organizational performance linkage. Owing to widespread adoption and relevance, the measures used by Janssen

(2000), that is, opportunity exploration, idea generation, championing (of the novel ideas and innovations) and application behaviors (implementation of the innovation in the firm) are recommended for adoption in this study.

Ambidextrous learning influences performance in dynamic environment. Organizations operate in dynamic environments characterized by technological changes, market competition, supplier market, market share pressures, government policy, globalization, fiscal policies and politics (Dess & Beard, 1984; Lee *et al.* 2011). Therefore, environmental dynamism impacts corporate strategy and ultimately performance. Organizational ambidexterity is contextual. It is dependent on micro and macro contexts of the firm. Volatile environments have greater impact on ambidextrous learning (Levinthal & March, 1993; Liao & Hu, 2007). Firms have to engage in exploratory learning in order to respond effectively to environmental changes and at the same time remain optimal, efficient and stable by engaging in exploitative learning (Levinthal & March, 1993; Lewin *et al.*, 1999; Liao & Hu, 2007). Jansen, *et al.* (2006) posits that environmental dynamism has positive and negative influence on exploratory learning and exploitative learning effects on performance respectively. Pressure from environmental changes necessitate a simultaneous deployment of both exploratory and exploitative learning in order to remain stable and leverage on the opportunities derived from aligning with business environment (Levinthal & March, 1993; Lewin *et al.*, 1999; Liao & Hu, 2007). Ambidextrous organizations are more flexible to respond to environmental volatility (Ireland & Webb, 2007).

Studies on ambidexterity have been largely done at organizational level, however, scholars have called for focus to be shifted to employee level as human resource is the core base for organizational ambidextrous learning (e.g. Gibson & Birkinshaw, 2004; Kang & Snell, 2009; Raisch, *et al.*, 2009; Li, *et al.*, 2013; Wei, *et al.*, 2013; Caniëls & Veld, 2016; Ajayi, *et al.*, 2017). Studies by Ajayi, *et al.* (2017) revealed that firms that have developed appropriate contexts for ambidexterity characterized by effective employee engagement and support enhanced their growth and survival rate. Ajayi, *et al.* (2017) viewed employee ambidexterity in the same way as did Gibson and Birkinshaw (2004) who categorized ambidextrous learning into exploitative learning that involved application of new knowledge for short term objectives and exploratory learning to involving search for new knowledge and skills for innovative goals with long term objectives. According to Raisch *et al.* (2009), ambidextrous learning is influenced by employees' ambidextrous capabilities. Raisch *et al.* (2009) found positive correlation employee-level ambidexterity and organizational level ambidexterity. Adopting the propositions of Gibson and Birkinshaw (2004), Perez and Pastor (2013) describe employee ambidexterity in terms of employee's creative ability and integrative ability which mirrors exploration and exploitation respectively. Therefore, to effectively study ambidextrous learning, it is imperative to not only focus on organizational level but also on employee-level because as indicated earlier innovation, knowledge assimilation, and organizational contexts are subjects of employee attitudes, perceptions and behaviour.

Mom, *et al.* (2009) views employee ambidexterity as an orientation that is behavioural. Patel, *et al.* (2013) advances the concept by postulating that employee ambidexterity is contextual and that high performance work systems promote behavioural climate that nurtures ambidexterity at employee-level. Scholars have identified the indicators of employee ambidexterity as employee alignment and employee adaptability (Gibson & Birkinshaw, 2004; He & Wong, 2004; Junni, *et al.*, 2013; Patel *et al.*, 2013). Employee alignment is determined by an organizational context that is characterized by discipline and stretch and employee adaptability is determined by a climate of support and trust (Gibson & Birkinshaw, 2004). Contextually, this climate is one that features HPWS characterised by practices such as strategic job designs, selective recruitment, performance-based compensation, and intensive training (Gibson & Birkinshaw, 2004; Patel *et al.*, 2013). Increasingly, there are calls for research that explores ambidexterity at the employee level (Birkinshaw & Gupta, 2013).

Reviewing the contextual and methodological approaches in empirical literature to explain inconsistencies in the relationship between ambidextrous learning and performance, reveal a glut of empirical literature in the contexts of developed economies in the West and a scarcity of research in developing economies. Most studies have adopted descriptive research designs and inferential statistical methods for data analysis (e.g. Tsai, 2001; Lee, *et al.*, 2004; Cao, *et al.*, 2009; Junni, *et al.*, 2012; Li, *et al.*, 2013; Wei, *et al.*, 2013; Gomes & Wojahn, 2016; Sutanto, 2016; Ajayi, *et al.* 2017). For instance, Lee, *et al.* (2004) study focused on the manufacturing industry in United States, United Kingdom, Germany, and Japan. Using a longitudinal survey (four years; 1999 – 2003) with a sample of 1,740 firms, the study revealed a positive relationship between ambidextrous learning and performance. A study by Lee and Huang (2012) examined the relationships among knowledge stock, ambidextrous learning, and firm performance. Using a survey with a sample of 312 firms of high-tech in China, the study found positive correlation between aspects of ambidextrous learning, knowledge stock and organizational performance. The study used regression analysis to test hypothesis. Wei, Yi, and Guo, 2013 explored how firms should dynamically reconfigure resource portfolios to leverage organizational ambidexterity for new product development and to bring greater conceptual clarity to the notion of balance. Data collected data from 213 firms in China through a survey. The study revealed that relative exploratory dimension has an inverse U-shaped effect on new product development while the interactive dimension has a positive effect on new product development.

Others studies used similar methodologies and contextual backgrounds. For example, Gomes and Wojahn (2016) mixed research design that utilized quantitative approaches, descriptive research design and causal design that applied cross-sectional survey methods. The study context was textile industry. Data was analyzed using structural equation modeling. The findings showed that learning positively impacts innovation but has insignificant effect on performance. Caniels and veld, 2016 examined the extent to which exploration and exploitation at employee level influenced innovative work behaviour. The study used online survey among employees working in an organisational support unit of the Dutch Defense organisation. Polynomial regression with response surface analysis to test the effect of independent variables on innovative work behaviour. The results showed that a balance of ambidextrous activities influence innovative behaviour. The moderating effect of HPWS was not supported by data.

Recent studies have agreed with earlier studies. Sutanto, 2016 examined the influence of organizational learning capability and organizational creativity on organizational innovation. This research used purposive random sampling method which involved 179 lecturers from all universities in East Java Province of Indonesia. Data was Analyzed using inferential statistics. The results indicated that organizational learning capability and organizational creativity influenced organizational innovation, partially and simultaneously. Ajayi, *et al.*, 2017 examined the linkages between the organisational context, employee ambidexterity and employee engagement. Using Cross sectional design, a sample of 200 SMEs were selected from across Nigeria. The study adopted mixed methods research methodology. The findings show that SMEs with the appropriate organisational contexts for employee ambidexterity and employee engagement will increase their potential for growth and survival.

Earlier works which support ambidexterity impact on performance albeit with new dimensions include Levinthal and March (1993), Tushman and O'Reilly (1996), Gibson and Birkinshaw (2004), Lubatkin, *et al.* (2006), Raisch and Birkinshaw (2008), Cao, *et al.*, (2009) and Zhang (2009). Studies by Gibson and Birkinshaw (2004) showed a positive association between ambidextrous learning and firm performance in a survey of 41 firms at business-level unit. Similarly, Lubatkin, *et al.* (2006) established a strong positive relationship between learning ambidexterity and organizational performance using a survey of 139 firms in the SMEs sector in England. Cao, *et al.* (2009) findings were similar as they showed a linear relationship on performance of firms in China.

However, scholars differ on the achievement of ambidexterity balance. Tushman and O'Reilly (1996) and Raisch and Birkinshaw (2008) hold the view that firms that engage in combination or balance of the exploratory and exploitative learning activities are poised for greater performance than firms which engage in exclusively one dimension of ambidexterity. On the contrary, other scholars such as Smith and Tushman (2005) argue that overemphasis on either dimension at the expense of the other will result in unfavorable outcomes. For instance a focus on exploitative activities may lead to inertia making the organization inflexible and unresponsive to environmental changes, while over focusing on exploration may lead to financial crisis and under exploitation of resources. Junni, *et al.*, (2012) calls for trade-offs between the ambidextrous learning dimensions. In foresight, March (1991) advocates for optimal blend of exploratory learning and exploitative learning to leverage both short and long term benefits of ambidexterity.

The measures used for ambidextrous learning in empirical literature have largely been informed by March (1991) seminal work. The operationalization of the concepts of exploration and exploitation in research transcending the last two decades has been understood and studied using the prism built by March (1991), albeit with slight adjustments to suit research objectives (e.g. Tushman & O'Reilly, 1996; Katila & Ahuja, 2002; Gibson & Birkinshaw, 2004; Atuahene-Gima, 2005; Auh & Menguc, 2005; Atuahene-Gima & Murray, 2007; Cao, *et al.*, 2009; Li, *et al.*, 2010; Raisch & Birkinshaw, 2008; Li, *et al.*, 2013; O'Reilly & Tushman, 2013; Wei, *et al.* 2013; Sutanto, 2016; Ajayi, *et al.*, 2017). The measures of ambidextrous learning as advanced by March (1991) are two dimensional: exploration whose indicators are referenced by constructs of search, variation, risk taking, experimentation, play, flexibility, discovery and innovation; and exploitation whose indicators have constructs such as refinement, choice, production, efficiency, selection, implementation and execution.

For instance, Li, *et al.* (2013) built on existing research and adopted Atuahene-Gima (2005) measures of competence exploration which entailed acquisition of new technological skills, new product and process development skills, new managerial and organizational skills for innovation, acquisition of new innovation skills; and competence exploitation measured in terms of search for knowledge that refines existing processes and technologies and solutions, information and ideas that enhance productivity and avoid mistakes, search for existing technologies and methods and problem solving techniques in product development, information to improve current projects and markets and use of knowledge relevant to ongoing project experiences.

Slightly different approach was adopted by Lee and Huang (2012) who aligned their measures with what had been advanced earlier (e.g. Katila & Ahuja, 2002; He & Wong, 2004) in which they measured exploratory learning in terms of accumulation of new knowledge and skills exploitative learning in terms of accumulation of

learning experiences. On the other hand, Wei, *et al.* (2013) adapted the scale of measures developed by Atuahene-Gima and Murray (2007) which challenges He and Wong (2004) and Lee and Huang (2012) measures for lack of dimensional measures in the continuum of ambidexterity and for its narrow perspective of the concept. The measures adapted by Wei, *et al.* (2013) focused on exploitative component measured in terms of search for information that refines common methods and ideas in solving problems, information and ideas that can be implemented to ensure productivity and avoid mistakes, search for proven methods and solutions to product development problems, information to improve current projects and markets and use of knowledge related to existing project experiences. The exploratory component was measured in terms of acquisition of new knowledge involving experimentation and risk taking, new knowledge of markets, technologies and product development beyond current experiences and scope. The study proposes the adaptation of the measures used by Li, *et al.* (2013) and Wei, *et al.* (2013).

Measurement of organizational performance in empirical studies reveal a multi-dimensional approach. Scholars have adopted different models informed by the objectives and scope of their studies. For instance, Li, *et al.* (2013) building on studies by Atuahene-Gima (2005) used financial indicators, ratio of new product sales to total sales, to measure new product performance. Lee and Huang (2012) measured firm performance in terms of returns on assets (ROA). Gomes and Wojahn (2016) measured performance in terms of customer loyalty, sales growth, profitability and return on investment. A more precise scale of measure of organizational performance relevant in the HRM domain was developed by Delaney and Huselid (1996). The scale has gained widespread adoption in HRM literature (e.g. Gibson & Birkinshaw, 2004; Guest, *et al.* 2004; Raisch & Birkinshaw, 2008; Andriopoulos & Lewis, 2009; Katou & Budhwar, 2010; Patel *et al.* 2013). According to the Sink and Tuttle Model (1989), organizational performance indicators include effectiveness, efficiency, quality of product/service, productivity level, quality of employee relations, innovativeness, and profitability. The scale contains performance indicator items which include quality of product; new product development; attraction of talent; talent retention; customer satisfaction; and employee relations. We propose the adaptation of Delaney and Huselid (1996) scale of non-financial measures, the Sink and Tuttle Model (1989), Deming's Model (1982) and Kaplan and Norton's balanced scorecard (1992, 1996).

2.2.2 Research Gaps

Research agrees on the fact that individuals may act as important agents of ambidextrous learning and on the fact that people management play a pivotal role in facilitating organizational learning (Ketkar & Puri, 2017). Perez and Pastor (2013) aver that there is scarcity of research that point to the role of human resource management (HRM) on ambidextrous learning. Ketkar and Puri (2017) decries the urgent need for research on ambidextrous Human Resource practices impact on performance at an individual level. In spite of the acknowledgement in literature that employee are at the heart of ambidexterity, including organizational learning, innovation and performance, there is limited literature on the mediating effect of employee ambidexterity on the relationship between its antecedent, organizational learning, and performance (Gibson & Birkinshaw, 2004; He & Wong, 2004; Lubatkin, *et al.* 2006; Raisch & Birkinshaw, 2008; Patel, *et al.*, 2013). Research on ambidexterity at the individual employee level of analysis is limited (Raisch & Birkinshaw, 2008; Birkinshaw & Gupta, 2013; Caniels & Veld, 2016). The call for empirical studies at an individual employee level of analysis (Ketkar & Puri, 2017) has been responded recently by a few scholars including O'Reilly and Tushman (2011), Ajayi, *et al.* (2017), and Ketkar and Puri, (2017). Empirically, there is very little information about the impact of employee explorative and exploitative activities on innovative work behaviour and firm performance (Zacher *et al.*, 2014). Research on ambidextrous learning and performance in the developing world context is limited (Ajayi, *et al.* (2017). Empirical studies on the concepts of ambidextrous learning and performance have to a large extent been based in Western contexts, including USA, UK, Germany, Japan, China, Turkey, and Taiwan (March, 1991; Tsai, 2001; Gibson & Birkinshaw, 2004; Cao *et al.*, 2009; Li, *et al.*, 2012; Lee & Huang, 2012; Patel, *et al.*, 2013; Mei, 2014). This points to a contextual gap in extant literature in the study of ambidextrous learning and performance as Ajayi, *et al.* (2017) posit that evidence drawn in Western context may not be replicated in other contexts. Baker and Sinkula (2007) and Jiang and Li (2008) aver that ambidextrous activities of a firm should be studied and understood within the micro and macro contexts they operate in. Lee and Huang (2012) recommended the need for future research to take into account the contingency effect of industrial diversity. Li, *et al.*, (2013) calls for further research and focusing on contextual differences in emerging economies. Wei, *et al.* (2013) avers that research has focused mainly on general sampling hence its findings are not industry-specific. This posturing by Wei, *et al.* (2013) points to the earlier assertions that ambidextrous learning configuration should be industry-specific for greater impact on organizational performance (e.g. March, 1991; Gibson & Birkinshaw, 2004; He & Wong, 2004). Therefore, there is a need for more industry-specific research on ambidextrous learning and performance with varying configurational models.

Despite numerous studies on the relationship between ambidextrous organizational learning and performance (e.g. March, 1991; Tushman *et al.*, 2004; Tushman & O'Reilly, 1996; Gibson & Birkinshaw, 2004; He & Wong, 2004; Yalcinkaya *et al.*, 2007; Cao *et al.*, 2009; Li, *et al.*, 2013; Lee & Huang, 2012; Patel, *et al.*,

2013; and Mei, 2014), extant literature is not conclusive. Some studies argue that ambidexterity dimensions of exploratory learning and exploitative learning are not compatible because they compete for scarce organizational resources and others postulating a combination or balance between exploitation and exploration activities (March, 1991; Tushman & O'Reilly, 1996; Gibson & Birkinshaw, 2004; Li, *et al.*, 2013). Other scholars argue that the two dimensions may have conflicting impact on organizational performance (e.g. Auh & Menguc, 2005; Atuahene-Gima & Murray, 2007; Li *et al.*, 2010). Katila and Ahuja (2002) argue that exploratory and exploitative learning originate from contradictory knowledge-processing capabilities. Some scholars have invited discussions on how both can be achieved at the same time (Raisch & Birkinshaw, 2008; Jalonen & Lo'nnqvist, 2009).

A review of extant literature reveals a conceptual gap. In spite of the increasing efforts to determine the antecedents (e.g. organizational structure, context, leadership) and moderating factors (e.g., environmental dynamism, market competitiveness) of organizational ambidexterity, there are still several gaps on the ambidexterity research (Lackner *et al.*, 2011; Raisch and Birkinshaw, 2008; Raisch *et al.*, 2009; Perez & Pastor, 2013). Scholars (e.g. March, 1991; Raisch & Birkinshaw, 2008; Li *et al.*, 2010) argue that the ambidextrous infrastructure for performance is conceptual. The antecedents and moderating influences of ambidextrous learning on organizational performance has not fully been exhausted (Li, *et al.*, 2013). Environmental exigencies, resource flexibility and management ties remain the major influencing factors studied in ambidexterity literature (Mei, 2014). There has been a persistent call for empirical studies utilizing different conceptual models in order to enhance the insights into the ambidextrous learning and performance architecture and framework (Raisch & Birkinshaw, 2008; Li *et al.*, 2010; Gomes & Wojahn, 2016). In addition, Caniels and veld (2016) decries a limitation of extant research on the effects of ambidextrous learning on innovation. Empirical literature does not provide much guidance on how firms can achieve innovative performance through ambidextrous learning. Despite the acceptance that ambidextrous learning is best employed at individual level there is limited literature to support the argument that innovative work behaviour mediates the relationship between ambidextrous learning and performance.

3. Conclusions and Recommendation

3.1 Conclusions

The study on ambidextrous learning and organizational performance is anchored on the theory of organizational learning ambidexterity. This is supported by knowledge based view (KBV), learning assimilation theory, dynamic resource management view, AMO, innovative work behaviour, and strategic human resource management perspectives. Exploitative learning ascertain organizations efficiency and stability while exploratory learning provide organizations innovative capability and flexibility necessary for growth. Ambidextrous learning impact on performance is hinged on effective HRM infrastructural support that is observable and managed at the employee level as the employees' extent of exploratory and exploitative learning will influence the extent of innovative work behaviour. A firm will gain competitive advantage derived from innovative activities only to the extent to which it disseminates and exploits organizational knowledge internally. Innovative work behaviour is critical to organizational sustained performance, future survival, and competitive advantage in the present (Janssen 2000; Gibson & Birkinshaw, 2004; Tushman, *et al.*, 2004; Andriopoulos & Lewis, 2008; Patel, *et al.*, 2013). Therefore, Innovative work behaviour and innovative capabilities are mediators of the link between ambidextrous learning and performance.

Ambidextrous activities of a firm should be studied and understood within the micro and macro contexts they operate in. Further, contingency effects of industrial diversity influence the impact of ambidextrous learning on performance (Collins & Smith, 2006). Therefore, ambidextrous learning configuration should be industry-specific for greater impact on organizational performance (Wei, *et al.* 2013). Past research is replete with knowledge gaps. Finding from empirical studies are contradictory and inconclusive particularly on the impact of ambidextrous learning on different indicators of organizational performance. In addition, configuration and conceptual frameworks for studying the linkage between ambidextrous learning and performance is limited. Future research should be conducted in developing contexts which have largely been overlooked in past studies.

3.2 Recommendation for Future Research

3.2.1 Proposed Conceptual Model

The link between the study variables (ambidextrous learning and performance) shall be moderated by environmental dynamism and mediated by innovative work behaviour as shown in the proposed conceptual framework Fig 1.

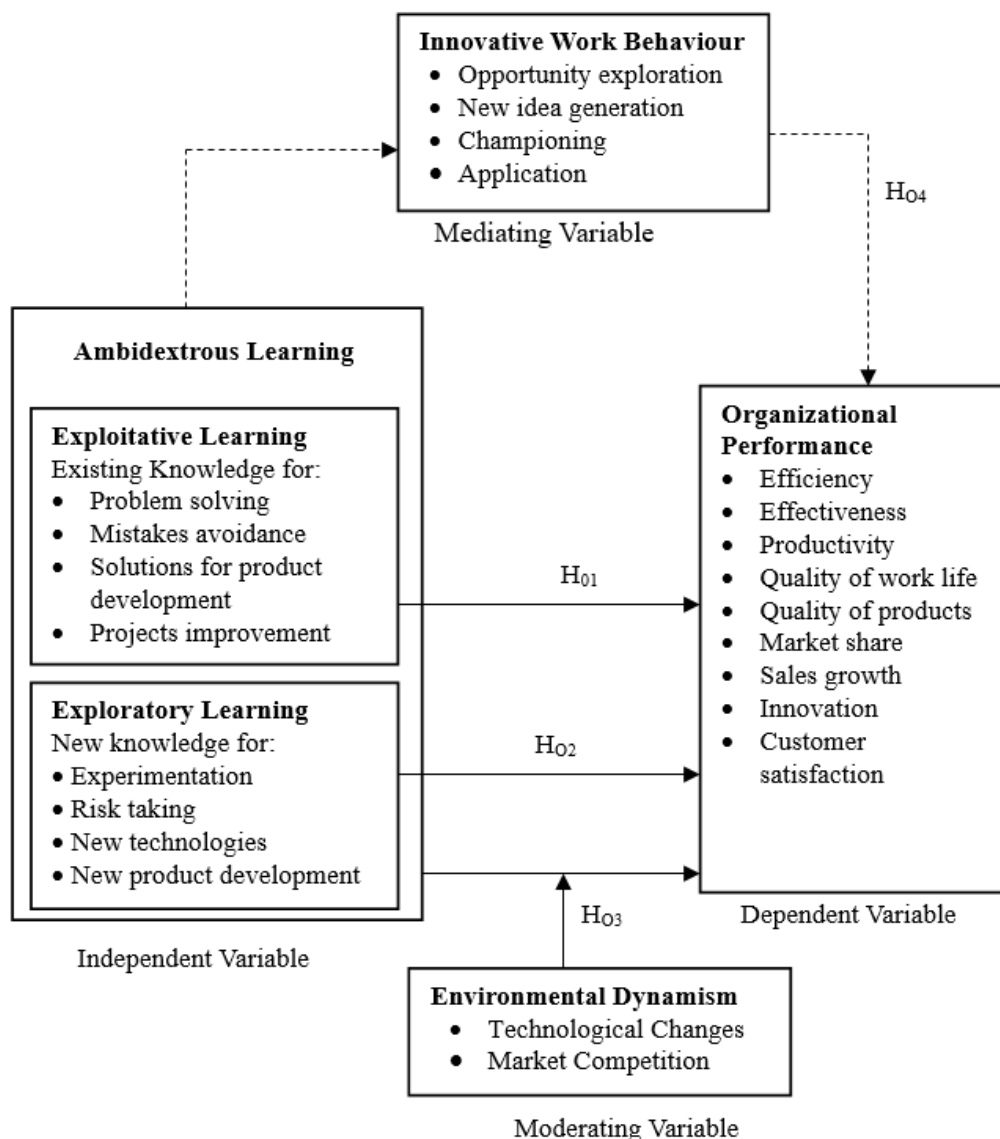


Figure 1: Proposed Conceptual Framework

Drawing from the above conceptual framework, it is hypothesized that:

H₀₁: There is no relationship between exploitative learning and organizational performance

H₀₂: There is no relationship between exploratory learning and organizational performance

H₀₃: Environmental dynamism has no moderating effect on the relationship between ambidextrous learning and organizational performance

H₀₄: Innovative work behaviour has no mediating influence on the relationship between ambidextrous learning and organizational performance

3.2.2 Proposed Measurement of Variables and Research Methodology

To measure ambidextrous learning, this study proposes the adaptation of the measures used by Li, *et al.* (2012) and Wei, *et al.* (2013) which builds on the scale of measures developed by Atuahene-Gima and Murray (2007). The measures include search for information that refines common methods and ideas in solving problems, information and ideas that can be implemented to ensure productivity and avoid mistakes, search for proven methods and solutions to product development problems, information to improve current projects and markets and use of knowledge related to current project experiences. The exploratory component will be measured in terms of acquisition of new knowledge involving experimentation and risk taking, new knowledge of markets, technologies and product development beyond current experiences and scope. The study proposes the adaptation of indicators and measures identified and advanced by other scholars (e.g. Gibson & Birkinshaw, 2004; Mom, *et al.* 2009; Patel *et al.*, 2013; Zacher *et al.*, 2014; Marjolein & Monique, 2016).

This study proposes the adaptation of integrated measures from Delaney and Huselid (1996) scale of non-financial measures, the Sink and Tuttle Model (1989), Deming's Model (1982) and Kaplan and Norton's

balanced scorecard (1992, 1996). The proposed scale contains performance indicators items which include market share, sales growth, innovation, customer satisfaction, efficiency, effectiveness, productivity, quality of products, and quality of work life. Innovative work behaviour will be measured by adopting the nine-item measure from Janssen (2000), who based it on the scale for individual innovative behaviour in the workplace created by Scott and Bruce (1994). This indicators are opportunity exploration, idea generation, championing and application behaviors. In line with empirical literature, environmental dynamism measures shall be adapted from existing research (e.g. Dess & Beard, 1984; Lewin *et al.*, 1999; Jansen, *et al.*, 2006; Ireland & Webb, 2007; Liao & Hu, 2007; Lee *et al.* 2011; Li, *et al.* 2012). This study proposes for the control for firm size and employee characteristics. Control for firm size shall be measured by the number of employees in an organization in the past three years. In addition at employee level, this study proposes control for age (measured in years) and educational level (higher scores reflect higher educational levels) of employees, as both might have an influence on innovative work behaviour (Janssen, 2000).

On research methodology, this study proposes the adoption of positivist research philosophy and descriptive and explanatory research design for the study of ambidextrous learning and performance. The design is more reliable and suitable in determining and producing the relationship models between study variables (Saunders, Lewis & Thornhill, 2009). Since the impact of exploratory learning takes time to be experienced, longitudinal survey method would be ideal. Podsakoff and Organ (1986) method of using two complementary questionnaires for top management in order to reduce common method variance bias in survey instrument should be adopted (Li, *et al.* (2013). Reliability and validity of data collection instrument should be assessed on two fronts: composite reliability shall be used to assess the inter-item consistencies indicated by Cronbach's alpha (Nunnally, 1978) in which a reliability coefficient of 0.7 or higher should be considered adequate; convergent validity shall be used to estimate the extent to which the items on a variable measure the theoretical construct in which a loading of 0.7 or higher shall be considered adequate (Fornell & Larcker (1981). This approach builds on existing research (Wei, *et al.* (2012). Further, the study proposes the use of both descriptive statistics and inferential statistics in data analysis (Cooper & Schindler, 2006; Saunders *et al.*, 2009).

References

- Ahuja, G., Lampert, C.M. (2001). Entrepreneurship in the large corporation: a longitudinal study of how established firms create breakthrough inventions. *Strategic Management Journal*, 22 (6-7): 521–543.
- Ajayi, O. M., Odusanya, K. & Morton, S. (2017). Stimulating employee ambidexterity and employee engagement in SMEs. *Management Decision*, 55 (4): 662-680,
- Alvarez, S. A., & Barney, J. B. (2007). Discovery and creation: Alternative theories of entrepreneurial action. *Strategic Entrepreneurship Journal*, 1(1): 11–26.
- Andriopoulos, C., & Lewis, M. W. (2008). Exploitation-exploration tensions and organizational ambidexterity: Managing paradoxes of innovation. *Organization Science*, 20(4): 696–717.
- Appelbaum, E., Bailey, T., Berg, P., & Kalleberg, A.L. (2000). *Manufacturing Advantage: Why High-performance Work Systems Pay-off*. London: Cornell University Press.
- Argyris, C. and Scho'n, D.A. (1978). *Organizational Learning: A Theory of Action Perspective*. Reading, MA: Addison-Wesley
- Armstrong, C., Flood, P.C., Liu, W., MacCurtain, S., & Mkamwa, T. (2010). The Impact of Diversity and Equality Management on Firm Performance: Beyond High Performance Work Systems. *Human Resource Management*, 49(6): 977–998.
- Atuahene-Gima, K. & Murray, J.Y. (2007). Exploratory and exploitative learning in new product development: a social capital perspective on new technology ventures in China. *Journal of International Marketing*, 15(2): 1–29.
- Auh, S. & Menguc, B. (2005). Balancing exploration and exploitation: the moderating role of competitive intensity. *Journal of Business Research*, 58(12): 1652–1661.
- Baker, W. E., & Sinkula, J. M. (1999). The synergistic effect of market orientation and learning orientation on organizational performance. *Journal of the Academy of Marketing Science*, 27(4): 411–427
- Baker, W.E. & Sinkula, J.M. (2007). Does market orientation facilitate balanced innovation programs? An organizational learning perspective. *Journal of Product Innovation Management*, 24: 316-34.
- Bapuji, H. & Crossan, M. (2004). From questions to answers: Reviewing organizational learning research. *Management Learning*, 35(4): 397–417.
- Becker, B., & Huselid, M.A. (1998). High Performance Work Systems and Firm Performance: A Synthesis of Research and Managerial Implications, in *Research in Personnel and Human Resource Management*, ed. G.R. Ferris, Greenwich, CT: JAI Press
- Benner, M. J., & Tushman, M. L. (2003). Exploitation, exploration and process management. *Academy of Management Review*, 28: 238–256.
- Birkinshaw, J., & Gupta, K. (2013). Clarifying the distinctive contribution of ambidexterity to the field of

- organization studies. *Academy of Management Perspectives*, 27: 287–298.
- Boselie, P., Dietz, G., & Boon, C. (2005). Commonalities and Contradictions in HRM and Performance Research. *Human Resource Management Journal*, 15: 67–94.
- Boxall, P., & Purcell, J. (2011). *Strategy and human resource management*. 3rd edition. Basingstoke: Palgrave Macmillan.
- Boxall, P., & Macky, K. (2009). Research and Theory on High-Performance Work Systems: Progressing the High-Involvement Stream. *Human Resource Management Journal*, 19 (1): 1–21.
- Burns, T. & Stalker, G.M. (1961). *The Management of Innovation*. London: Tavistock.
- Camps, J. & Luna-Arocas, R. (2012). A matter of learning: How human resources affect organizational performance. *British Journal of Management*, 23(1): 1–21.
- Camps, J., Alegre, J., & Torres, F. (2011). Towards a methodology to assess organizational learning capability: A study among faculty members. *Inter-national Journal of Manpower*, 32(5/6): 687–703.
- Cao, Q. Gedajlovic, E. & Zhang, H. (2009). Unpacking organizational ambidexterity: dimensions, contingencies, and synergistic effects. *Organization Science*, 20 (4): 781–796.
- Chiva, R., & Alegre, J. (2005). Organizational learning and organizational knowledge: Towards the integration of two approaches. *Management Learning*, 36(1): 49–68.
- Chiva, R., Alegre, J., & Lapedra, R. (2007). Measuring organizational learning capability among the workforce. *International Journal of Manpower*, 28 (3/4): 224–242.
- Cohen W. & Levinthal, D. (1990). Absorptive capacity: a new perspective on learning and innovation. *Administration Science*, 35(1): 128–152
- Delaney, J.T., & Huselid, M.A. (1996). The Impact of Human Resource Management Practices on Performance in for-Profit and Nonprofit Organizations. *Academy of Management Journal*, 39: 949–969.
- Delery, J., & Doty, D. (1996). Modes of Theorizing in Strategic Human Resource Management: Tests of Universalistic, Contingency and Configurational Performance Predictions. *Academy of Management Journal*, 39(4): 802–835.
- Dess, G.G. & Beard, D.W. (1984). Dimensions of organizational task environments. *Administration Science*, 29: 52-73
- Drucker, P.F. (1986). *Innovation and Entrepreneurship: Practice and Principles*. New York: Harper Business.
- Duncan, R. (1976). The ambidextrous organization: Designing dual structures for innovation. In *the Management of Organizational Design*, edited by R. Kilman and L. Pondy. New York: North Holland: 167-188.
- Easterby-Smith, M. & Lyles, M. A. (2003). Introduction watersheds of organizational learning and knowledge management. In *the Blackwell handbook of organizational learning and knowledge management*. Edited by M. Easterby-Smith and J. Burgoyne. Malden/USA: Blackwell.
- Etzioni, A. (1960). Two approaches to organizational analysis: a critique and suggestion. *Administrative Science Quarterly*. 5: 257-258
- Floyd, S.W. & Lane, P.J. (2000). Strategizing throughout the organization: managing role conflict in strategic renewal. *Academy of Management Review*, 25: 154-77.
- Gibson, C. B., & Birkinshaw, J. (2004). The antecedents, consequences, and mediating role of organizational ambidexterity. *Academy of Management Journal*, 47: 209–226.
- Gomes, G. & Wojahn, R.M. (2016). Management Organizational learning capability, innovation and performance: study in small and medium-sized enterprises (SMES).
- Goodman, P. S. & Pennings, J. M. (1977). *New perspectives on organizational effectiveness*. San Francisco – London: Jossey-Bass Publishers.
- Grant, R. M. (1996). Toward a Knowledge-based Theory of the Firm. *Strategic Management Journal*, 17(winter): 109-122
- Guest, D., and Hoque, K. (1996). National Ownership and Human Resource Management in UK Greenfield Sites. *Human Resource Management Journal*, 6(4): 50–74.
- Guest, D.E. (1987). Human Resource Management and Industrial Relations. *The Journal of Management Studies*, 24(5): 503–521.
- Guest, D.E. (1997). Human Resource Management and Performance: A Review and Research Agenda. *The International Journal of Human Resource Management*, 8(3): 263–276.
- Guest, D.E. (2011). Human Resource Management and Performance: Still Searching for Some Answers. *Human Resource Management Journal*, 21(1): 3–13.
- Guest, D.E., & Conway, N. (2011). The Impact of HR Practices, HR Effectiveness and a “Strong HR System” on Organisational Outcomes: A Stakeholder Perspective. *The International Journal of Human Resource Management*, 22(8): 1686–1702.
- Gupta, A. K., Smith, K. G., & Shalley, C. E. (2006). The interplay between exploration and exploitation. *Academy of Management Journal*, 49: 693–706.

- Guthrie, J. (2001), 'High Involvement Work Practices, Turnover, and Productivity: Evidence from New Zealand,' *Academy of Management Journal*, 44, 180–192.
- Hannan, M. T., & Freeman, J. (1984). Structural inertia and organizational change. *American Sociological Review*, 49 (2): 149–64.
- He, Z.L. & Wong, P.K. (2004). Exploration vs. exploitation: an empirical test of the ambidexterity hypothesis. *Organization Science*, 15 (4): 481–494.
- Huselid, M. A. (1995). The impact of human resource management practices on turnover, productivity, and corporate financial performance. *Academy of Management Journal*, 38: 635–672.
- Ichniowski, C., & Shaw, K. (1999). The Effects of Human Resource Management Systems on Economic Performance: An International Comparison of U.S. and Japanese Plant. *Management Science*, 45: 704–720.
- Ichniowski, C., Shaw, K., & Prennushi, G. (1997). The Effects of Human Resource Management Practices on Productivity: A Study of Steel Finishing Lines. *The American Economic Review*, 87: 291–313.
- Ireland, R.D. & Webb, J.W. (2007). Strategic entrepreneurship: Creating competitive advantage through streams of innovation. *Business Horizon*, 50; 49-59.
- Jalonen, H. & Lo'nqvist, A. (2009). Predictive business – fresh initiative or old wine in a new bottle. *Management Decision*, 47(10): 1595-609.
- Jansen, J.J.P., Van den Bosch, F.A.J. & Volberda, H.W. (2006). Exploratory innovation, exploitative innovation, and performance: effects of organizational antecedents and environmental moderators. *Management Science*, 52 (11): 1161–1174.
- Janssen, O. (2000). Job demands, perceptions of effort-reward fairness and innovative work behaviour. *Journal of Occupational and Organizational Psychology*, 73: 287–302.
- Jiang, X. & Li, Y. (2008). The relationship between organizational learning and firms' financial performance in strategic alliances: a contingency approach. *Journal of World Business*, 43: 365-79.
- Jiménez-Jiménez, D., & Cegarra-Navarro, J. G. (2007). The performance effect of organizational learning and market orientation. *Industrial Marketing Management*, 36(6): 694–708.
- Jiménez-Jiménez, D., & Sanz-Valle, R. (2011). Innovation, organizational learning, and performance. *Journal of Business Research*, 64(4): 408–417.
- Junni, P., Sarala, R. M., Taras, V., & Tarba, S. Y. (2013). Organizational ambidexterity and performance: A meta-analysis. *Academy of Management Perspectives*, 27: 299–312.
- Jyothibabu, C., Farooq, A., & Pradhan, B. B. (2010). An integrated scale for measuring an organizational learning system. *The Learning Organization*, 17(4): 303–327.
- Kang, S.-C., & Snell, S. A. (2009). Intellectual capital architectures and ambidextrous learning: A framework for human resource management. *Journal of Management Studies*, 46: 65–92.
- Kaplan, R. S., & Norton, D. P. (1992). The Balanced Scorecard - Measures that drive performance. *Harvard Business Review*, Jan-Feb: 71-79.
- Kaplan, R. S., & Norton, D. P. (1996). *The Balanced Scorecard: Translating strategy into action*. Boston, Ma: Harvard Business School Press.
- Katila, R. & Ahuja, G. (2002). Something old, something new: A longitudinal study of search behavior and new product introduction, *Academy of Management Journal*, 45(5): 1183-1194
- Katila, R., (2002). New product search overtime: past ideas in their prime? *Academy of Management Journal*, 45 (5): 995–1010.
- Katou, A., & Budhwar, P. (2006). Human Resource Management Systems and Organizational Performance: A Test of a mediating Model in the Greek Manufacturing Context. *The International Journal of Human Resource Management*, 17(7): 1223–1253.
- Keskin, H. (2006). Market orientation, learning orientation, and innovation capabilities in SMEs: An extended model. *European Journal of Innovation Management*, 9(4): 396–417.
- Lee, C. & Huang, Y. (2012). Knowledge stock, ambidextrous learning, and firm performance: Evidence from technologically intensive industries. *Management Decision*, 50(6): 1096-1116
- Lee, C.Y., Wang, M. C. & Lin, J. C. (2011). The effects of a focal firm's internal and external boundary conditions on the performance implication of R&D alliance participation. *IEEE International Technology Management Conference*, 575-586
- Leonard-Barton, D. (1992). Core capabilities and core rigidities: A paradox in managing new product development. *Strategic Management Journal*, 13: 111-125
- Lepak, D.P., Liao, H., Chung, Y., & Harden, E.E. (2006). A Conceptual Review of Human Resource Management Systems in Strategic Human Resource Management Research. *Research in Personnel and Human Resource Management*, 25: 217–271.
- Levinthal, D. A., & March, J. G. (1993). The myopia of learning. *Strategic Management Journal*, 14: 95–112.
- Lewin, A. Y., Long, C. P. & Carroll, T. N. (1999). The coevolution of new organizational forms," *Organization Science*, 10: 535-550

- Li, L., Liu, J., (2012). An efficient and flexible web services-based multidisciplinary design optimization framework for complex engineering systems. *Enterprise Information Systems* 6 (3): 345–371.
- Li, Y., Wei, Z., Zhao, J., Zhang, C. & Liu, Y. (2013). Ambidextrous organizational learning, environmental munificence and new product performance: Moderating effect of managerial ties in China. *International Journal of Production Economics*. 146: 95–105
- Li, Y., Zhang, C., Liu, Y. & Li, M. (2010). Organizational learning, internal control mechanisms, and indigenous innovation: the evidence from China. *IEEE Transactions on Engineering Management* 57 (1): 63–77.
- Liao, S. & Hu, T. (2007). Knowledge transfer and competitive advantage on environmental uncertainty: An empirical study of the Taiwan semiconductor industry. *Technovation*, 27; 402-411
- Lin, Z., Yang, H. & Demirkan, I. (2007). The performance consequences of ambidexterity in strategic alliance formations: empirical investigation and computational theorizing. *Management Science*, 53; 1645–1658
- Liu, Y., Li, Y. & Wei, Z., (2009). How organizational flexibility affects new product development in an uncertain environment: evidence from China. *International Journal of Production Economics*, 120 (1): 18–29.
- Liu, Y., Loi, R., & Lam, L.W. (2011). Linking Organizational Identification and Employee Performance in Teams: The Moderating Role of Team–Member Exchange. *The International Journal of Human Resource Management*, 22(15): 3187–3201.
- March, J.G., (1991). Exploration and exploitation in organizational learning. *Organization Science* 2 (1): 71–87.
- McGill, M. E., & Slocum, J. W. (1993). Unlearning the organization. *Organizational Dynamics*, 22(2): 67–79.
- Miner, A., Bassoff, P. & Moorman, C. (2001): Organizational improvisation and learning: a field study. *Administrative Science Quarterly*, 46: 304–37.
- Mom, T. J., Fourné, S. P., & Jansen, J. J. (2015). Managers’ work experience, ambidexterity, and performance: The contingency role of the work context. *Human Resource Management*, 54: 133–153.
- Mom, T. J., Van Den Bosch, F. A., & Volberda, H. W. (2007). Investigating managers’ exploration and exploitation activities: The influence of top-down, bottom-up, and horizontal knowledge inflows. *Journal of Management Studies*, 44: 910–931.
- Mom, T. J., Van den Bosch, F. A., & Volberda, H. W. (2009). Understanding variation in managers’ ambidexterity: Investigating direct and interaction effects of formal structural and personal coordination mechanisms. *Organization Science*, 20: 812–828.
- Nelson, R.R. & Winter, S.G. (1982). *An Evolutionary Theory of Economic Change*. Belknap
- Nevis, E. C., Dibella, A. J. & Gould, J. M. (1995). Understanding organizations as learning systems. *Sloan Management Review*, Winter: 73-85.
- Nonaka, I. (1994). A dynamic theory of organizational knowledge creation. *Organization Science*, 5(1): 14–37
- Patel, P. C., Messersmith, J. G., & Lepak, D. P. (2013). Walking the tightrope: An assessment of the relationship between high-performance work systems and organizational ambidexterity. *Academy of Management Journal*, 56: 1420–1442.
- Pfeffer, J. (1998). *The Human Equation: Building Profits by Putting People First*. Boston, MA: Harvard Business School Press.
- Purcell, J., & Kinnie, N. (2007). Human Resource Management and Business Performance. in *the Oxford Handbook of Human Resource Management*, eds. P. Boxall, J. Purcell, and P. Wright, New York: Oxford University Press.
- Quinn, R. E., & Rohrbaugh, J. (1983). A spatial model of effectiveness criteria: Towards a competing values approach to organizational analysis. *Management Science*, 29 (3): 363-377.
- Raisch, S., & Birkinshaw, J. (2008). Organizational ambidexterity: Antecedents, outcomes, and moderators. *Journal of Management*, 34: 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.
- Rhee, J., Park, T. & Lee, D.H. (2010). Drivers of innovativeness and performance for innovative SMEs in South Korea: mediation of learning orientation. *Technovation*, 30(1): 65-75.
- Rosing, K., Frese, M., & Bausch, A. (2011). Explaining the heterogeneity of the leadership innovation relationship: Ambidextrous leadership. *The Leadership Quarterly*, 22: 956–974.
- Salavou, H. (2005). Do customer and technology orientations influence product innovativeness in SMEs? Some new evidence from Greece. *Journal of Marketing Management*, 21(3-4): 307–338.
- Sidhu, J. S., Commandeur, H. R. & Volberda, H. W. (2007). The multifaceted nature of exploration and exploitation: Value of supply, demand, and spatial search for innovation. *Organization Science*, 18 (1): 20–38.
- Simsek, Z., Heavey, C. & Veiga, J. A. (2009). Typology for aligning organizational ambidexterity’s conceptualizations, antecedents, and outcomes. *Journal of Management Studies*, 46 (5): 864–94.
- Sink, D. S. & Tuttle, T. (1989). *Planning and Measurement in your Organization of the Future*. Norcross GA:

- Industrial Engineering and Management Press.
- Sirmon, D. G., Cove, S., Hitt, M. A. Ireland, R. D. & Gilbert, B. A. (2011). Resource orchestration to create competitive advantage: Breadth, depth and life cycle effects. *Journal of Management*, 37 (5): 1390–412.
- Sirmon, D. G., Cove, S. & Hitt, M. A. & Ireland, R. D. (2007). Managing firm resources in dynamic environments to create value: Looking inside the black box. *Academy of Management Review*, 32 (1): 273–93.
- Sirmon, D. G., Cove, S. & Hitt, M. A. (2008). Resource management in dyadic competitive rivalry: The effects of resource bundling and deployment. *Academy of Management Journal*, 51 (5): 919–35.
- Smith, W. K. & Tushman, M. L. (2005). Managing strategic contradictions: A top management model for managing innovation streams. *Organization Science*, 16 (5): 522–36.
- Sutanto, E.M. (2016). The influence of organizational learning capability and organizational creativity on organizational innovation of Universities in East Java, Indonesia Asia. *Pacific Management Review*,
- Tamkin, P. (2004). *High Performance Work Practices*. Institute of Employment Studies
- Teece, D., Pisano, G. & Shuen, A. (1997). Dynamic capabilities and strategic management,” *Strategic Management Journal*, 18(7): 509-533
- Tushman, M.L. & O’Reilly, C.A. (1996). Ambidextrous organizations: managing evolutionary and revolutionary change. *California Management Review*, 38: 8–30.
- Tushman, M.L., Smith, W., Wood, R., Westerman, G. & O’Reilly, C. (2004). Innovation Streams and Ambidextrous Organizational Designs: On Building Dynamic Capabilities. *Social Science Research Network (SSRN) Working Paper*.
- Uotila, J., Maula, M. & Keil, T. (2009). Exploration, exploitation, and financial performance: Analysis of S & P 500 corporations. *Strategic Management Journal*, 30 (2): 221–31.
- Wadhwa, A. & Kotha, S. (2006). Knowledge creation through external venturing: evidence from the telecommunications equipment manufacturing industry. *Academy of Management Journal*, 49(4): 1-17.
- Wood, S., & De Menezes, L.M. (1998). High Commitment Management in the UK: Evidence from the Workplace Industrial Relations Survey and Employers’ Manpower and Skills Practices.
- Wright, P.M., & McMahan, G.C. (1992). Theoretical Perspective for Strategic Human Resource Management. *International Journal of Management*, 18: 295–320.
- Wright, P.M., & Nishii, L. (2004). Strategic HRM and Organizational Behaviour: Integrating Multiple Level Analysis. Paper presented at the ‘*What Next for HRM*’ Conference, Rotterdam.
- Wright, P.M., Gardner, T.M., & Moynihan, L.M. (2003). The Impact of HR Practices on the Performance of Business Units. *Human Resource Management Journal*, 13(3): 21–36.
- Yalcinkaya, G.R., Calantone, R.J. & Griffith, D.A. (2007). An examination of exploration and exploitation capabilities: implications for product innovation and market performance. *Journal of International Marketing*, 15 (4): 63–93.
- Youndt, M.A., Snell, S., Dean Jr, J.W. & Lepak, D.P. (1996). Human resource management, manufacturing strategy, and firm performance. *Academy of Management Journal*, 39(4): 836–866.
- Yuchtman, E. & Seashore, S. E. (1967). A system resource approach to organizational effectiveness. *American Sociological Review*, 32: 891-903.
- Zhang, Y., & Li, S. (2009). High Performance Work Practices and Firm Performance: Evidence from the Pharmaceutical Industry in China. *The International Journal of Human Resource Management*, 20(11): 2331–2348.
- Zhang, Y., Li, Z., Xu, L. & Wang, J. (2011). A new method for automatic synthesis of tolerances for complex assemblies based on polychromatic sets. *Enterprise Information Systems*, 5(3): 337–358
- Zhou, C. Z., & Wu, F. (2010). Technological capability, strategic flexibility, and product innovation. *Strategic Management Journal*, 31 (5): 547–61.
- Zhou, K.Z., Yim, C.K. & Tse, D.K. (2005). The effects of strategic orientations on technology- and market-based breakthrough innovations. *Journal of Marketing*, 69 (2): 42–60