Implementing Ambidexterity in Project Management Organizations: A Review of Literature

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Abstract:

There is a growing amount of projectization in organizations. Projects are used as a vehicle to deliver organizational business. There are unique challenges in terms of management of resources and project portfolio management in a project-based organization. One of the management philosophies that have been gaining popularity in last 20 years is ambidexterity. It is defined as " ….the ability to simultaneously pursue both incremental and discontinuous innovation and change… " [1].

Ambidexterity has been gaining popularity with project organizations both in public and private sectors all across the world. However, in order to implement it, we still need a better understanding of what it entails. This paper is going to present a review of literature to explore a range of aspects associated with ambidexterity. These aspects will then highlight the major challenges associated with the implementation of ambidexterity.

Keywords: *Ambidexterity, Project Management, Organization*

I. INTRODUCTION

Ambidexterity is a research concept which is maturing and it's theoretical prism involves "the ability to simultaneously pursue both incremental and discontinuous innovation and change" [1]. In the field of project management, ambidexterity is attracting the attention of scholars at a high level [2] [10] and "the wider operations management discipline" [11] [12]. In terms of its theoretical prism, it can be said that ambidexterity is not only one of the theories which is currently being involved into project management from operations management [13], but it has also been employed as "a prism to explore a number of project management concepts including, for example, complexity" [14]. For example, [10] claims "that instead of a traditional view of complexity as a construct to be either reduced or resolves, an ambidextrous perspective will imply the concurrent 'accommodation' and 'minimization' of complexity" [14]. For Production Planning and Control, Ambidexterity has become a lens and they recently started using it at a large scale [15] [16]. The concept of ambidexterity is becoming increasingly popular amongst the scholars and it appears to be "driven by its versatile and pervasive nature and application to various disciplines" [17] [6]. One of the areas of applications of ambidexterity is project management. The concept that project management must be versatile and needs to deliver projects for a range of organizations and a range of initiatives. The flexibility that project paradigm offers, means that projects could be used as an effective vehicle to deliver the benefits of ambidexterity for both public and private sector projects.

With the growing popularity of ambidexterity, it is important to identify challenges associated with its implementation. This paper identifies the challenges and opportunity from literature review and discusses their implementation in project management organizations. The rest of the paper is divided into four more sections. The next section presents a review of literature in the area of project management; it is followed by a section on ambidexterity and its definitions from the literature. It is followed by a section on discussion and analysis of challenges associated with managing ambidexterity. The final

section discusses the conclusions of this paper.

II. PROJECT MANAGEMENT

A. *Project*

A project is a given, plannable and unique task, limited in time, complex in its implementation, and subject to evaluation. This conception has given rise to the definition of Project Management. Project management is the art of directing and coordinating human and material resources throughout the life cycle of a project by using modern management techniques to achieve predetermined objectives of scope, cost, time, quality, and participant satisfaction [18] [36].

B. *Evolution of Project Management*

At the end of the 1950s, the network planning techniques – the Critical Path Method (CPM) and the Program Evaluation Review Technique (PERT) – were developed, but problems arose due to the simplicity of the techniques. In the 1960s, project-related research concerning organization theory, human resource management and leadership was initiated. Projects as time-limited sequences of events are usually divided into three sequential distinct stages: development (conceptualization and planning), implementation, and termination. Following this ideal internal project logic, the theoretical field of project management can be described in terms of planning, controlling and evaluation theories. The next major development in the research agenda within project management came with [18]. In his paper, he claimed that there is an alternative research agenda concerning research methods and supported this assertion by creating a project temporary organization.

With the growing popularity of projectization of operations in organizations, it was important to look at the ways and means of executing a range of projects, which have different remits, with the same resources, and still utilizing them optimally.

There are evidences available in the literature which suggests that the projects which are running act as a critical driver for the organizations to achieve their objectives and help them drive towards their vision

and mission [19] [13]. "Due to their ephemeral nature [7] [20], the mutuality of its interdependent processes [5] and temporal switching ability [21] [11], projects serve as the ideal conduit for managing distinct routines that encompass operations" [22] [14]. In strategic management [23] and project management disciplines [24] [25] extensive research has been conducted for the organizations to find out the advantages "pursuing single as against a multiple number of project initiatives" [14] and whether the organizations are competent enough to pursue simultaneously multiple projects that are sometimes contradictory in nature in terms of strategic goals [23].

There are studies which suggest that is very rare for the organizations to undertake and deliver single projects [4]. However, the research from various authors acknowledge this fact that although it is advantageous for the organizations to run a single project at a time where they are directing all their resources in the delivery of that project, but after a while they may start experiencing declining returns [14] organizations do not generally implement one project at a time. Generally, projects are implemented concurrently/ simultaneously which might put an organization in a position where it needs to implement a number of projects which are contradictory to themselves. In order to counter such risks, most of the organizations prefer to maintain and run a portfolio of projects where they introduce and manage the projects simultaneously, where a continuous range of multiple concurrent projects are arranged and the 'portfolios' of projects are formed. If an organization wants to manage a project portfolio then the managers need to have a broad perspective of projects where they consider each project as an independent entity. If an organization decides to maintain a portfolio of projects then each project is considered independent, but collectively, they are interdependent as these projects are sharing the resources, therefore, contributing (however discrete) to the "viability of the entire portfolio" [26] [14].

With the need to manage and maintain a portfolio of projects that have shared resources and varying needs, it is important that project organizations be responsive. This responsiveness is achieved through ambidexterity.   The following section discusses

elements of ambidexterity in detail.

III. AMBIDEXTERITY

A. Definition of Ambidexterity

Ambidexterity in general English is the capability of an individual to use both hands effectively with ease i.e., the quality of being ambidextrous (The Concise English Dictionary, 2004). According to [17] the organizations frame ambidexterity to aggregate and manage the tensions when they are involved in accomplishing two different things at the same time. [37] states that the researchers in structural ambidexterity [1] found that those companies share common characteristics who successfully exploited the present and explored the future. These companies separate their traditional business from their new exploratory endeavour. This separation is displayed formally in the structure, processes, systems and culture in both the traditional and new undertakings which is supported by a strong link at the senior level across all units of the organization. It is a unique combination of managing and balancing the tension of separation across units on one hand and integrating senior level executives on the other hand [1] [37].

According to [6] the use of the word 'ambidexterity' within the literature is not represented as a "managerial activity, it reflects capability." Instead of reflecting something that managers 'do', it directs at 'what they do'. The concept of ambidexterity was adopted by various scholars so that they could apply it in the field of their study. According to [38] the topic of ambidexterity is applicable to multiple areas of research, which includes, strategic management [39] [40] [41], innovation and technology management [42] [43] [1] organizational learning [44], organization theory and behaviour [45] [46] and operations management [47] [6]. The context of the terms used varies with their field of study.

[48] states that in organizational theory the concept of ambidexterity is widely used as a "research paradigm". They illustrated this model as "a theoretical framework of a scientific school or discipline within which theories, generalisations, and the methods to test them are formulated". Although,

so much attention has been given to the discussion of ambidexterity, but it has to be noted that, only a few firms could actually attain ambidexterity [49] [6], therefore more research into the description of its structure or mechanism is required by the organizations to obtain maximum benefits.

The word ambidexterity has been used in various forms in literature [48]. Table 2 above shows some of the varied definitions of ambidexterity from various authors from different perspective. Authors appear to have interpreted the concept of ambidexterity as "the ability to pursue two contrasting objectives, which inherently leads to the creation of a tension that must be reconciled or accommodated" [50]. [51] argues that "the so-called learning organization is 'a management Rorschach Test' (Rorschach 'ink-blot test' as a psychological evaluation of personality) because one can see whatever one wants to see in this concept". After the analysis of definitions from various authors, [6] defined Ambidexterity as "Ambidexterity is the ability of an organization to both use and exploit existing knowledge (exploitation) whilst also creating new knowledge to overcome knowledge deficiencies or absences identified within the execution of the work (exploration)".

The above definitions of Ambidexterity were analysed by the author and based on the above definitions from various authors and various perspectives ambidexterity can be defined as "The ability of an organization to manage efficiency, innovation and flexibility simultaneously where the innovation could be exploitative (the organization is exploiting the existing knowledge) on one hand and exploratory (the organization is creating new knowledge to manage the scarcity of resources while executing the work) on the other hand".

B. Levels of Ambidexterity

The levels can be considered as "decision points that reside at the point of the individual project manager" [12] [14]. Rousseau [27] defines it as 'the hierarchical relationship and attributes of the constituent elements of an organization', levels of ambidexterity can be discussed at the individual level (i.e., the project manager in this case), the organizational or the social level [6]. According to Petro at al [14] it can also be

referred to the "individual, project, operations and strategic perspective of ambidexterity". While Li [28] did considerable research where they examined the operationalization at different levels. They found out, for example, that exploitation and exploration were considered as distinct at individual level. At project level, they found out that the new developments in the projects dominates the level of focus which impacts the exploration process.

At the individual project manager level, the individual has the authority to make decisions which positively impacts on "competency for ambidexterity competency", however, if the project tasks are formalized and then allocated, there will be no major impact on their ambidexterity competency [29]. The study conducted by [30] was researched further by [2] and [31] where both of them explored on the impact of project leadership upon ambidexterity. According to [6] the scholars appear to be more interested in organizational level and this area is of considerable interest amongst them whereby demonstrating arguably the highest level of empirical research. Likewise, the individual level, at firm level, exploitation and exploration were considered as distinct, however at firm level, the focus of this distinction was on "exploitation as the search for 'near' knowledge search and exploration as the search for 'distant' knowledge" [14]. Levels can also be surrounded by sub-elements, for example, within the organization. This may involve, for example, "the level of the firm and the employee [32] and also functional units and/or the project" [6] [32]. At the employee level, scholars have been more interested, for example, in understanding the role played by the top-managers/ executives in actualizing ambidexterity [33]. [34] in their recent studies provided very interesting insights into top managers/executives roles in actualizing ambidexterity where they stated that generally it is understood that the top-managers/executives play a major role in actualizing ambidexterity, but on the contrary, it is in fact the frontline managers (such as project managers) that perhaps are more proactive and central to the role in executing ambidexterity. [45] states that the project level can be conceptualized as the representative of the "multiple tightly coupled subunits that are themselves loosely coupled with each other". The studies conducted by [6], generally

suggests that due to extreme complexities at the functional level of the organization, there is a need to do more intense resourcing and processes (mechanisms) so that the project level ambidexterity could be supported.

IV. CHALLENGES OF MANAGING AMBIDEXTERITY

Organizational ambidexterity has drawn the attention of the researchers which led to the increase in the number of studies in this area. In 2004 the number of journals published in this area was less than 10 and it has now exceeded to more than 80. The concept of ambidexterity is extending and is far more refined due to the increased level of involvement and attention of the researchers. this increasing attention has contributed to the refinement and extension of the ambidexterity concept. According to [35] "First, conceptual work has been complemented by large-scale empirical studies that provide evidence of organizational ambidexterity's generally positive association with firm performance". Second, the initial attention to structural antecedents has been extended to investigations of the roles played by contextual [46], informal network [52], and leadership based [53] [40] [54] antecedents of ambidexterity. Third, studies have started to explore how environmental [55] [56] and organizational moderators [57] [40] [58] affect the interrelations between ambidexterity, its antecedents, and performance outcomes. This body of work has been categorized and thoroughly discussed in recent review papers [59] [48]". Although, the concept of ambidexterity became the focus of attention for researchers where they have contributed so much in this area still there are various important issues which are still dubious, vague and needed more exploration as the concept is still puzzling. Raisch et al [35] did more research and came up with "four closely interrelated central tensions" which required more focus to help explore the concept of ambidexterity further.

A. Differentiation Vs Integration:

Differentiation and integration is the first tension which could be used as a substitute or a complementary route to ambidexterity.

Differentiation refers to the segregation of the activities of the organization as exploitative and explorative, and allocating them to specific or distinct organizational units, whereas integration on the other hand refers to the mechanisms that facilitates the organizations to address exploitative and explorative activities within the same organizational unit. According to various scholars there are flaws which are inherent in both the two approaches which have often been presented as mutually exclusive solutions. These two approaches could be enhanced further if a better level of understanding of these tensions and their complementarities could be developed.

Raisch et al [35] concluded that firstly, if an organization needs to improve its effectiveness then they need to realize that integration and differentiation are complementary and not a substitute of each other. Secondly, the relative balance between integration and differentiation will probably change depending on the type of tasks and activities conducted. Third, the management needs to regularly scrutinize the tension between integration and differentiation.

B. Individual Vs Organization:

The organization needs to find out if ambidexterity is incorporated at the individual or organizational level representing the second tension. Most of the research on ambidexterity usually discuss organizational mechanisms such as formal structures or lateral coordination systems to enable ambidexterity. Contrary to this, some scholars argues that ambidexterity is individual specific having an ability to explore and exploit. To implement ambidexterity at individual level, organizational mechanisms may be used. Ambidextrous individuals may be crucial to provide versatility to organizational mechanisms. Therefore, there is a need for theories to be formulated that capture ambidexterity across multiple levels of analysis.

[35] argues that it is important for the organizations to encourage managers to display "(to different degrees)" personal ambidexterity by engaging themselves in both exploitation and exploration activities. Secondly, the extent of ambidexterity

amongst the managers changes with context. The magnitude and ease of display of ambidexterity varies from one individual to the other based on their personality, strengths and the context they operate. Third, organizational ambidexterity is not cumulative but is influenced by several other factors such as interactivity between individuals and the rest of the organization.

C. Sequential Vs Concurrent:

This is the third tension of ambidexterity showcasing static versus dynamic aspect. There are various scholars who suggests that exploitation and exploration activities demand sequential attention, but the majority of research on organizational ambidexterity favors solutions which facilitates simultaneous execution of the two activities. These studies are more influenced by the static view of organizational behavior: Introducing various changes in composition or the structure of the organizations help them become ambidextrous. Due to the dynamic characteristics of the markets and organizations, it becomes essential for the organizations to develop theories that help them combine "static elements with more dynamic perceptions of ambidexterity".

Raisch et al [35] argues that "managing for ambidexterity" is preferred in more dynamic alignment rather than static arrangement. Secondly, in order to preserve ambidexterity whether structural or contextual, different solutions are required based on demands and requirements of the market. Thirdly, "ambidexterity may arise from both simultaneous and sequential attention to exploitation and exploration".

D. Internal Vs External:

The last and the fourth tension represents the internal versus external context of ambidexterity. The main focus of research on organizational ambidexterity is mostly based on how exploitation and exploration are addressed internally by the organizations. Innovation and knowledge processes related research stresses more on the importance of how the organizations acquire new knowledge from external sources for exploration. There are studies on dynamic capabilities which construe the liaison between internal and external knowledge processes which helps in corporate renewal. The organization needs to explore the interplay between internal and external processes

which play an important role in the formulation and conservation of organizational ambidexterity.

Raisch at all [35] argues that the ability to incorporate internal and external knowledge base may help the organization attain ambidexterity. Secondly, the ability of the organization to integrate external knowledge depends on the contribution from external factors and the internal absorptive capacity. Thirdly, there are social network which supports ambidexterity contradicting internally and externally by bridging strong ties.

CONCLUSION

Ambidexterity is an important aspect of any project management organization. This paper reviewed the definitions and challenges associated with the implementation of ambidexterity in project management organizations. There are four major challenges that are associated with the management of ambidexterity in an organization. The first one is the conflicting needs of an organization to have a clear separation of activities, but in addition in order to become ambidextrous the organization needs to be able to integrate better and the individual units should be in a position to supplement each other if there are more project activities in one specific skills domain. The second major challenge is to decide where the focus of ambidexterity should be: should it be at an individual level or organizational level. Ambidextrous individuals are definitely an asset but how does the organization maintain control on boundaries of individual units. Everyone cannot be allowed to do everything despite being capable. So how could those boundaries be maintained? The third challenge is to decide when to decide to do activities in sequence and when to do them concurrently or in parallel. There are some obvious restrictions that could be imposed by projects, but there could also be occasions where one has a choice and has to look at utilization of resources as well as long term implications. The fourth challenge is to look at internal and external capabilities that are available. The growing popularity of outsourcing has led to the development of a marketplace where an organization does not need to have all skills or all

skills in the required quantities. They could have a core team and then manage outsourcing vendors for specific skills. However, what level of internal skills and external reliance does the organization need to have is a major challenge and a major decision point.

In order to implement and manage ambidexterity, the organization will have to manage these four challenges effectively.

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REFERENCES

[1] Tushman, M. L. and O'Reilly, C. A. (1996), "Ambidextrous Organizations: Managing Evolutionary and Revolutionary Change", California Management Review, vol. 38, no. 4, pp. 8-30.

[2] Aubry, M., and P. Lievre. 2010. "Ambidexterity as a Competence of Project Leaders: A Case Study from Two Polar Expeditions." Project Management Journal 41 (3): 32–44. doi:10.1002/pmj.20183.

[3] Leybourne, S., and P. Sainter. 2012. "Advancing Project Management: Authenticating the Shift from Process to Nuanced Project-Based Management in the Ambidextrous Organization." Project Management Journal 43 (6): 5–15. doi:10.1002/pmj.21306.

[4] Eriksson, P. 2013. "Exploration and Exploitation in Project-Based Organizations: Development and Diffusion of Knowledge at Different Organizational Levels in Construction Companies." International Journal of Project Management 31 (3): 333–341. doi:10.1016/j.ijproman. 2012.07.005.

[5] Turner, N., and L. Lee-Kelley. 2013. "Unpacking the Theory on Ambidexterity: An Illustrative Case on the Managerial Architectures, Mechanisms and Dynamics." Management Learning 44 (2): 179–196. doi:10.1177/1350507612444074.

[6] Turner, N., H. Maylor, and J. Swart. 2013. "Ambidexterity in Managing Business Projects –An Intellectual Capital Perspective." International Journal of Managing Projects in Business 6 (2): 379–389. doi:10.1108/ 17538371311319089.

[7] Turner, N., H. Maylor, and J. Swart. 2015. "Ambidexterity in Projects: An Intellectual Capital Perspective." International Journal of Project Management 33 (1): 177–188. doi:10.1016/j.ijproman.2014.05.002.

[8] Turner, N., Maylor, H., Lee-Kelley, L., Brady, T., Kutsch, E., & Carver, S. (2014). Ambidexterity and knowledge strategy in major projects: A framework and illustrative case study. *Project Management Journal*, *45*(5), 44-55.

[9] Turner, N., E. Kutsch, and S. A. Leybourne. 2016. "Rethinking Project Reliability Using the Ambidexterity and Mindfulness Perspectives." International Journal of Managing Projects in Business 9 (4): 845–864. doi:10.1108/IJMPB-08-2015-0074.

[10] Turner, N., J. Aitken, and C. Bozarth. 2018. "A Framework for Understanding Managerial Responses to Supply Chain Complexity."20 Y. Petro et al. International Journal of Operations and Production Management 38 (6): 1433–1466. doi:10.1108/IJOPM-01-2017-0062.

[11] Kortmann, S., C. Gelhard, C. Zimmermann, and F. Piller. 2014. "Linking Strategic Flexibility and Operational Efficiency: The Mediating Role of Ambidextrous Operational Capabilities." Journal of Operations Management 32 (7–8): 475–490. doi:10.1016/j.jom.2014.09.007.

[12] Sohani, S., and M. Singh. 2017. "Multilevel Analysis of Ambidexterity and Tagging of Specialised Projects in Project-Based Information Technology Firms." International Journal of Operations and Production Management 37 (9): 1185–1206. doi:10.1108/IJOPM-04-2016-0212.

[13] Maylor, H., J. Meredith, J. Soderlund, and T. Browning. 2018. "Old Theories, New Contexts: Extending Operations Management Theories to Projects." International Journal of Operations and Production Management 38 (6): 1274–1288. doi:10.1108/IJOPM-06-2018-781

[14] Petro, Y., U. Ojiako, T. Williams, and A. Marshall. 2019. "Organizational Ambidexterity: A Critical Review and Development of a Project Focused Definition." ASCE Journal of Management in Engineering 35 (3): doi:10.1061/(ASCE)ME.1943-5479.0000685.

[15] Esposito De Falco, S., A. Renzi, B. Orlando, and N. Cucari. 2017. "Open Collaborative Innovation and Digital Platforms." Production Planning and Control 28 (16): 1344–1353. doi:10.1080/09537287.2017.1375143.

[16] Love, P., J. Smith, F. Ackermann, and Z. Irani. 2018. "The Praxis of Stupidity: An Explanation to Understand the Barriers Mitigating Rework in Construction." Production Planning and Control 29 (13): 1112–1125. doi:10.1080/09537287.2018.1518551.

[17] Birkinshaw, J., & Gupta, K. (2013). Clarifying the distinctive contribution of ambidexterity to the field of organization studies. *Academy of Management Perspectives*, *27*(4), 287-298.

[18] Packendorff, 1995 inquiring into the temporary organization: new directions for project management research. Scandinavian journal of management, 11(4), pp.319-333.

[19] Ojiako, U., M. Chipulu, A. Marshall, M. Ashleigh, S. Maguire, T. Williams, and L. Obokoh. 2015. "Heterogeneity and Perception Congruence of Project Outcomes." Production Planning and Control 26 (11): 858–873. doi:10.1080/09537287.2014.994684.

[20] Prado, P., and J. Sapsed. 2016. "The Anthropophagic Organization: How Innovations Transcend the Temporary in a Project-Based Organization." Organization Studies 37 (12): 1793–1818. doi:10.1177/ 0170840616655491.

[21] Liu, L., and D. Leitner. 2012. "Simultaneous Pursuit of Innovation and Efficiency in Complex Engineering Projects: A Study of the Antecedents and Impacts of Ambidexterity in Project Teams." Project Management Journal 43 (6): 97–110. doi:10.1002/pmj.21301.

[22] Hayes, R. 2002. "Challenges Posed to Operations Management by the "New Economy." Production and Operations Management 11 (1): 21–32. doi:10.1111/j.1937-5956.2002.tb00182.x.

[23] Wassmer, U., S. Li, and A. Madhok. 2017. "Resource Ambidexterity through Alliance Portfolios and Firm Performance." Strategic Management Journal 38 (2): 384–394. doi:10.1002/smj.2488

[24] Kornfeld, B., and S. Kara. 2011. "Project Portfolio Selection in Continuous Improvement." International Journal of Operations and Production Management 31 (10): 1071–1088. doi:10.1108/01443571111172435.

[25] Martinsuo, M. 2013. "Project Portfolio Management in Practice and in Context." International Journal of Project Management 31 (6): 794–803. doi:10.1016/j.ijproman.2012.10.013.

[26] Verma, D., A. Mishra, and K. Sinha. 2011. "The Development and Application of a Process Model for R and D Project Management in a High Tech Firm: A Field Study." Journal of Operations Management 29 (5): 462–476. doi:10.1016/j.jom.2010.11.010.

[27] Rousseau, D. 1985. "Issues of Level in Organizational Research: Multilevel and Cross-Level Perspectives." Research in Organizational Behaviour 7: 1–37.

[28] Li, Y., Vanhaverbeke, W., & Schoenmakers, W. (2008). Exploration and exploitation in innovation: Reframing the interpretation. Creativity and Innovation Management, 17(2), 107–126.

[29] Mom, T.J.M., Van den Bosch, F.A.J., & Volberda, H.W. (2007). Investigating managers' exploration and exploitation activities: The influence of top-down, bottomup, and horizontal knowledge inflows. Journal of Management Studies, 44(6), 910–931.

[30] Mom, T.J.M., Van den Bosch, F.A.J., & Volberda, H.W. (2009). Understanding variation in managers' ambidexterity: Investigating direct and interaction effects of formal structural and personal coordination mechanisms. Organization Science, 20(4), 812–828.

[31] Lin, H. and McDonough, E. F. (2011), "Investigating the Role of Leadership and Organizational Culture in Fostering Innovation Ambidexterity", IEEE Transactions on Engineering Management, vol. 58, no. 3, pp. 497-509.

[32] Kassotaki, O., S. Paroutis, and K. Morrell. 2018. "Ambidexterity Penetration across Multiple Organizational Levels in an Aerospace and Defense Organization." Long Range Planning 52 (3): 366–385. doi: 10.1016/j.lrp.2018.06.002.

[33] Garcıa-Granero, A., A. Fernandez-Mesa, J. Jansen, and J. Vega-Jurado. 2017. "Top Management Team Diversity and Ambidexterity: The Contingent Role of Shared Responsibility and CEO Cognitive Trust." Long Range Planning 51 (6): 881–893. doi:10.1016/j.lrp.2017.11.001.

[34] Zimmermann, A., S. Raisch, and L. Cardinal. 2018. "Managing Persistent Tensions on the Frontline: A Configurational Perspective on Ambidexterity." Journal of Management Studies 55 (5): 739–769. doi:10.1111/joms.12311

[35] Raisch, S., Birkinshaw, J., Probst, G. and Tushman, M. L. (2009), "Organizational Ambidexterity: Balancing Exploitation and Exploration for Sustained Performance", Organization Science, vol. 20, no. 4, pp. 685-695.

[36] Project Management Institute. (1987). Project management body of knowledge (PMBOK). Project Management Institute.

[37] Dutta, S. K. (2012). Dynamic capabilities: Fostering ambidexterity. *SCMS Journal of Indian Management*, *9*(2), 81.

[38] Simsek, Z. (2009), "Organizational Ambidexterity: Towards a Multilevel Understanding", Journal of Management Studies, vol. 46, no. 4, pp. 597-624.

[39] Jansen, J., George, G., Van den Bosch, F. and Volberda, H. W. (2008), "Senior Team Attributes and Organizational Ambidexterity: The Moderating Role of Transformational Leadership", Journal of Management Studies, vol. 45, no. 5, pp. 982-1007.

[40] Lubatkin, M. H., Simsek, Z., Ling, Y. and 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, vol. 32, no. 5, pp. 646-672.

[41] Voelpel, S. C., Leibold, M. and Tekie, E. B. (2006), "Managing purposeful organizational misfit: Exploring the nature of industry and organizational misfit to enable strategic change", Journal of Change Management, vol. 6, no. 3, pp. 257-276

[42] Ambos, T. C., Mäkel, K., Birkinshaw, J. and D'Este, P. (2008), "When Does University Research Get Commercialized? Creating Ambidexterity in Research Institutions", Journal of Management Studies, vol. 45, no. 8, pp. 1424-1447.

[43] He, Z. and Wong, P. (2004), "Exploration vs. Exploitation: An Empirical Test of the Ambidexterity Hypothesis", Organization Science, vol. 15, no. 4, pp. 481-494.

[44] Levinthal, D. A. and March, J. G. (1993), "The Myopia of Learning", Strategic Management Journal, vol. 14, pp. 95-112.

[45] Benner, M. J. and Tushman, M. L. (2003), "Exploitation, Exploration, and Process Management: the Productivity Dilemma Revisited", Academy of Management Review, vol. 28, no. 2, pp. 238-256.

[46] Gibson, C. B. and Birkinshaw, J. (2004), "The Antecedents, Consequences, and Mediating Role of Organizational Ambidexterity", Academy of Management Journal, vol. 47, no. 2, pp. 209-226.

[47] Adler, P., Benner, M., Brunner, D., MacDuffie, J., Osono, E., Staats, B., Takeuchi, H., Tushman, M. and Winter, S. G. (2009), "Perspectives on the Productivity Dilemma", Journal of Operations Management, vol. 27, no. 2, pp. 99-113.

[48] Raisch, S. and Birkinshaw, J. (2008), "Organizational Ambidexterity: Antecedents, Outcomes, and Moderators", Journal of Management, vol. 34, no. 3, pp. 375-409.

[49] Sarkees, M. and Hulland, J. (2009), "Innovation and efficiency: It is possible to have it all", Business horizons, vol. 52, no. 1, pp. 45-55.

[50] Andriopoulos, C., & Lewis, M. W. (2010). Managing innovation paradoxes: Ambidexterity

lessons from leading product design companies. *Long range planning*, *43*(1), 104-122.

[51] Friedman, V. J., Lipshitz, R., & Popper, M. (2005). The mystification of organizational learning. *Journal of management inquiry*, *14*(1), 19-30.

[52] Gulati, R., & Garino, J. (2000]. Get the right mix of bricks & clicks. Harvard Business Review, May-June, 107- 114.

[53] Beckman, C.M. (2006). The influence of founding team company affiliations on firm behavior. Academy of Management Journal, 49(4), 741–758.

[54] Smith, W.K., & Tushman, M.L. (2005). Managing strategic contradictions: A top management model for managing innovation streams. Organization Science, 16(5), 522–536.

[55] Auh, S., & Menguc, B. (2005). Balancing exploration and exploitation: The moderating role of competitive intensity. Journal of Business Research, 58(12), 1652–1661.

[56] 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), 1661–1674.

[57] Atuahene-Gima, K. (2005). Resolving the capability–rigidity paradox in new product innovation. *Journal of marketing*, *69*(4), 61-83.

[58] 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.

[59] O'Reilly, C. A. and Tushman, M. (2008), "Ambidexterity as a Dynamic Capability: Resolving the Innovator's Dilemma", Research in Organizational Behavior, vol. 28, pp. 185-206.