

## Revisiting the Construct Validity of Exploration and Exploitation

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### Abstract

Scholars use the constructs of exploration and exploitation in a wide variety of contexts. As the applications of the constructs diverge, so do the perspectives of the scholars who substantiate the constructs. Some scholars conceptualize exploration and exploitation as distinct and mutually contradictory: we refer to this as the choice perspective. Other scholars perceive exploration and exploitation as sequential stages: we refer to this as the stage perspective. We examine the distinct characteristics of the two perspectives, their contributions to the research of exploration and exploitation, and limitations in these perspectives that may negatively impact and constrain further research. We conclude by proposing measures to more effectively unleash the potential of the two constructs.

**Key words:** Exploration, exploitation, adaptation, construct validity

### I. Introduction

The constructs of exploration and exploitation have been very widely used since the seminal work by March (1991). Although they are originally proposed in the context of organizational learning, these constructs have been applied to many areas of study, including organizational strategy (Lee, Lee, & Lee, 2003; Smith & Zeithaml, 1996), innovation (Benner & Tushman, 2002; Sørensen & Stuart, 2000), search (Rosenkopf & Nerkar, 2001), alliances (Rothaermel & Deeds, 2004; Yang, Zheng, & Zhao, 2014), team or group member composition (Beckman, 2006), new product design (Piao, 2010), and knowledge absorption (Foss, Lyngsie, & Zahra, 2013; Zahra & George, 2002), just to name a few. Such widespread use attests to

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the usefulness of the constructs. However, there is inconsistency in the way these terms are understood, which has led to confusion and negatively affected the progress of research. As the applications of the constructs proliferate, the meanings of the constructs diverge as well. This demonstrates the need to reexamine the essence of the constructs of exploration and exploitation by critically reviewing how they are used. This is the purpose of this manuscript.

The construct of exploration and exploitation is originally defined in very general terms. Exploitation is usually related to improvements, increased efficiency, and incremental adjustments, whereas exploration is closely linked to variety generation, distinctly new possibilities, distant search, and radical or revolutionary change (March, 1991). A general definition such as this encourages widespread applications of the constructs, including very creative ones. However, at the same time, the essence of exploration and exploitation is sometimes lost as scholars stretch the constructs to their limits. Some use exploitation / exploration constructs to denote distinct and mutually contradictory modes of organizational learning. Others use the constructs to distinguish the stages or steps that make up organizational processes. Still others, as an extension of the above usage, use the constructs to describe sub-processes of organizational capability to absorb external knowledge, or absorptive capacity (Cohen & Levinthal, 1990).

These applications are mutually related, but they are employed to convey different ideas, used in distinct organizational contexts, and adopted from perspectives distinct from each other. Therefore, they can (as we will describe below) be used inappropriately in wrong organizational contexts. The terms may also detract from the clarity of arguments, as different ideas are used as if they are interchangeable. In short, there is a concern that the drawbacks of the excessively flexible applications of the constructs of exploration and exploitation may outweigh the benefits of their versatility.

Therefore, the purpose of this manuscript is to contribute to the research on exploration and exploitation by making explicit the different ways in which the constructs have been applied, and the different perspectives that underlie these applications, and by proposing measures for more appropriate use of the constructs. First, we introduce some of the major applications and their underlying perspectives. Then we critically examine the ways in which they have contributed to, and impeded, research. Then, we review the literature to illustrate inappropriate use of the constructs of exploration and exploitation. We conclude the manuscript by proposing measures for more appropriate use of the constructs.

## **II. Two Alternative Perspectives on Exploration and Exploitation**

### **1. The choice perspective: exploration and exploitation as organizational choices**

Complex systems, including organizations, aim to optimize their performance by adjusting to changing competitive requirements (Holland, 1975); a phenomenon we call adaptation. Holland (1975) particularly emphasizes the importance of balancing “the efficient use of information and capabilities already available” (p.181) and the “acquisition of new information and capabilities” (ibid.) despite their mutually contradictory nature. These general patterns of organizational adaptation are extended as patterns of organizational learning by March (1991), who defines the former as “exploitation” and the latter as “exploration”. As such, exploration and exploitation, as originally defined, are dichotomous and mutually contradictory.

According to March (1991), exploration “includes things captured by terms such as search, variation, risk taking, experimentation, play, flexibility, discovery, innovation” (p.71) whereas exploitation “includes such things as refinement, choice, production, efficiency, selection, implementation, execution” (ibid.). Building on his original insights, scholars (Benner & Tushman, 2002; Bierly & Chakrabarti, 1996; Crossan, Lane, & White, 1999; Katila & Ahuja, 2002; Rosenkopf & Nerkar, 2001; Sørensen & Stuart, 2000; Sidhu, Commandeur, & Volberda, 2007; Zhou & Wu, 2010) define exploitation and exploration as alternative modes of organizational learning. Although specific terms vary, the consensus is that, in the context of organizational learning, the term exploitation refers to the use and refinement of existing knowledge in domains internal to the organization, whereas exploration refers to the search and pursuit of new knowledge in domains external to the organization.

When defined as distinct and mutually contradictory constructs, exploration and exploitation are seen to compete with each other for scarce organizational resources. The resources may be money, people, or managerial attention (Ocasio, 1997). As exploration and exploitation are viewed as distinct and contradictory, resources committed to the former cannot be used for the latter, and vice versa. This is critical for the adaptive performance of organizations because exploration and exploitation are distinct not only in terms of learning behaviors of organizations but also in terms of the locus of learning. In other words, the sometimes understated, but critical underlying assumption, is that knowledge (or information) to be explored cannot be identical to knowledge (or information) to be exploited. In short, organizational choice between exploration and exploitation is concerned with critical choice about how to learn as well as what to learn. We refer to this perspective, in which exploration and exploitation are seen to be distinct and mutually contradictory choices for organizations, as the choice perspective.

Scholars characterize the relationship between exploration and exploitation as a trade-off relationship. When exploration is prioritized, exploitation suffers, and vice versa. This trade-off relationship is partially a consequence of the scarcity of organizational resources. However, it is more deeply rooted in the distinctive differences between alternative sets of organizational design elements, including organizational structure, organizational culture, and organizational capability, targeted to achieve either exploitation or exploration. These two sets of organizational design elements are seen as contradictory and antagonistic to each other to the extent that they mutually exercise “the negative externalities” that result in lower performance and a diminished probability of survival (Boumgarden, Nickerson, & Zenger, 2012). It also is argued that “the operation of two separate organizational alignments (for exploration and exploitation) with different competencies, incentives, and cultures increases the chances for conflict, disagreement, and poor communication” (O’Reilly & Tushman, 2008). Furthermore, as these elements of organizational design are self-reinforcing, organizations that are good at exploration tend to become more exploratory at the cost of diminishing exploitation. This is known as the failure trap (Levinthal & March, 1993). In contrast, organizations designed to efficiently exploit existing knowledge and information slowly but steadily crowd out exploration (Levitt & March, 1988). In short, most organizations are designed to focus on either exploration or exploitation and so simultaneous pursuit of exploration and exploitation is inherently difficult.

The distinct and contradictory nature of the constructs has two important implications for the adaptive performance of organizations. First, exploration is an appropriate mode of organizational learning in a dynamically changing competitive environment, while exploitation is more appropriate in a stable and mature competitive environment. Continuous learning (and unlearning) of new knowledge is necessary for effective adaptation to environments characterized by continuously changing requirements for knowledge. On the other hand, exploiting the value of existing knowledge contributes to organizational performance to the extent that the validity of the current knowledge is maintained in stable environments.

Environmental change and stability can also be understood as timeframes within which organizations adapt to competitive environments: the second implication for adaptive performance of organizations. As implied in the discussion above, exploitation is useful for organizations adapting to the current competitive environment, or for relatively short-term adaptation. On the other hand, organizations explore when they opt to allocate more resources for adaptations to relatively distant future competitive environments, including uncertain ones. Therefore, exploration and exploitation differ in terms of the competitive environment for which they are particularly effective, or the time frames within which they contribute to adaptive

performance of organizations. Consequently, scholars employ varying combinations (or balance) of exploration and exploitation when they examine the reasons why some organizations are more adaptive than others given a particular degree of environmental turbulence (and stability) or a particular length of observation period. Thus, the comparative dichotomization of exploration and exploitation, as originally presented, is a conceptual framework that describes and explains the adaptive performance of organizations (Holland, 1975; March, 1991).

## **2. The stage perspective: exploration and exploitation as sequential stages**

Other scholars build on the choice perspective by defining exploitation as a stage through which knowledge or opportunities identified through a preceding stage of exploration is “accessed and imbued into the product” (Rothaermel & Deeds, 2004:204) for favorable organizational performance. Therefore, we hereafter refer to this alternative perspective, in which exploration and exploitation are viewed as sequential stages of some organizational procedures, as the stage perspective. Under the stage perspective, exploitation is assumed to follow exploration: there can be no exploitation without exploration. Therefore, the first and critical difference between this and the choice perspective of March (1991) and his colleagues is that the locus of exploitation and of exploration are identical, because otherwise, it would be impossible to conceptualize exploration and exploitation as one sequence. In other words, exploration contributes to organizational performance only to the extent that exploitation follows.

The second difference between the choice perspective and the stage perspective is that there is no trade-off relationship between exploration and exploitation: exploration and exploitation are distinct stages of one sequence of organizational activities aimed for one organizational outcome, rather than contradictory choices that compete for organizational resources. In short, under the stage perspective, the terms exploration and exploitation are employed simply to categorize groups of activities, rather than to describe and explain the reason why some organizations perform more favorably than others.

Another example of the stage perspective can be found in the literature on absorptive capacity (Cohen & Levinthal, 1990), where Zahra and George (2002) include exploitation as one of several sub-processes of absorptive capacity. Zahra and George (2002) redefine absorptive capacity as an organizational capability to acquire, assimilate, transform, and exploit “externally generated knowledge” (p.189). In other words, exploitation is conceptualized as an organizational capability to “refine, extend, and leverage existing competencies or to create new ones by incorporating acquired and transformed knowledge into its operations” (p.190). As the original definition by Cohen and Levinthal (1990) is “an ability to recognize the

value of new information, assimilate it, and apply it to commercial ends” (128), Zahra and George (2002) deconstruct “apply” (Cohen & Levinthal, 1990) into “transform” and “exploit”. Judging from the fact that Zahra and George (2002) do not refer to March (1991), it is appropriate to understand that exploitation (Zahra & George, 2002) is apparently a distinct construct from exploitation (March, 1991). Furthermore, exploitation (Zahra & George, 2002) is not paired with exploration (March, 1991) in the framework proposed by Zahra and George (2002). “Exploitation” (Zahra & George, 2002) is little more than the act of realizing the potential value of externally acquired knowledge by utilizing it for commercial purposes. It is meant to explicitly show that simply acquiring external knowledge is meaningless for the competitiveness of organizations.

The perspective of Zahra and George (2002) shares two critical aspects with the perspective of Rothaermel and his colleagues. Firstly, exploitation (Zahra & George, 2002) is perceived as one stage in an organizational process. Secondly, the locus of “exploitation” (Zahra & George, 2002) is identical with that of the preceding stages. In other words, it is possible to understand the perspective of Zahra and George (2002) as an application of the stage perspective to a specific context of external knowledge absorption.

### **III. Contributions and Shortcomings of Alternative Perspectives**

#### **1. The choice perspective**

The choice perspective enables scholars to unleash the utility of the exploration / exploitation constructs as a useful conceptual framework to describe and explain organizational adaptation and organizational performance.

First, the exploration / exploitation constructs differentiate between competitive environments and time-frames in which organizations should pursue respective modes of organizational learning.

Second, the constructs deepen our understanding of appropriate organizational structure, organizational culture, and strategy with respect to differential competitive environments or time-frames in which effective organizational adaptation is considered.

Third, one of the most promising research areas for which the choice perspective can be developed is within the theory of organizational ambidexterity. Scholars examine the relationship between the simultaneous pursuit of exploration and exploitation and favorable organizational performance. This line of inquiry is grounded in the following premises: 1) exploration and exploitation enable favorable organizational performance under distinct competitive environments, and in distinct time frames;; 2) organizations suffer from the trade-off relationship between exploration

and exploitation; and 3) if such a trade-off could be overcome to enable simultaneous pursuit of exploration and exploitation, organizations may be able to adapt to a wider variety of competitive environments and to maintain adaptability for both the short and the long term. The literature on organizational ambidexterity can be further developed by unpacking distinct sets of characteristics, antecedents, and performance benefits of exploration and exploitation.

On the other hand, one of the most critical shortcomings associated with the choice perspective is the difficulty in defining exploration and exploitation with sufficient robustness. Exploration is sometimes seen as an act to build on the knowledge earned through prior efforts of organizations, and yet this can also be characterized as exploitative. In fact, it is very difficult to identify exploration completely unrelated with any of the prior knowledge of an organization. Similarly, exploitation is exploratory in some aspects because organizations earn new knowledge by refining, extending, or recombining their existing knowledge. In short, it is straightforward to define exploration and exploitation, but identifying exploration and exploitation in actual organizational contexts is challenging.

Consequently, scholars who adopt the choice perspective sometimes face challenges of substantiating (or operationalizing) the constructs of exploration and exploitation. The original definitions of the constructs are limited to the abstract distinction between building on existing knowledge and searching for novel knowledge. Scholars may ensure the validity of the distinction they make between exploration and exploitation by explicitly demarcating a class of knowledge in which they dichotomize current and novel knowledge (for example, knowledge on certain technology), but they remain vulnerable to the criticism that their distinction may not be valid for other classes of knowledge. For example, refining certain knowledge on existing technology may be exploitative, but it also could be exploratory when the knowledge is used to address the needs of new customers.

## **2. The stage perspective**

One of the most important contributions of the stage perspective is to clarify effective managerial approaches for successive (but distinct) stages of organizational procedures by explicitly separating stages of exploration and stages of exploitation. For example, it may be important to understand the differences across distinct stages in terms of the degree of associated risks and uncertainties or the type of knowledge to be processed. Applying exploration and exploitation to differentiate stages can be one effective approach to deepen our understanding of distinct characteristics to be considered for effective execution of these stages. For example, scholars employ the stage perspective to examine distinct stages of knowledge absorption and to identify distinct antecedents for each stage.

However, there are serious shortcomings with the stage perspective, as we discuss below. We describe shortcomings concerning the definitions of the constructs, operationalization of the constructs, performance implications, and implications for future research.

**Definition of constructs:** It is important to note that the stage perspective shows some progress from the choice perspective. By defining exploitation as a subsequent stage of exploration, scholars aim to make the distinction between exploration and exploitation more explicit and robust. More specifically, they aim to minimize the possibility that what is defined as exploitation reveals some exploratory aspects. It is, however, still conceivable that organizations try to fully exploit (or commercialize) knowledge earned through prior exploration, and simultaneously explore additional new knowledge so that they can better leverage the focal knowledge. This means that the exploitation (as a later stage of knowledge utilization) is also exploratory in that exploitation of the focal knowledge is at the same time exploration of the additional new knowledge. This is very confusing. It also disrupts the efforts of scholars to operationalize the constructs, as we discuss below.

As for the definition of exploration, we see no substantial differences between the stage perspective and the choice perspective. Therefore, the stage perspective shares with the choice perspective the absence of a robust definition of exploration, unless we strictly apply the condition that exploitation should be an act of commercialization. In other words, exploration is inevitably exploitative to some degree, in that organizations generally explore new knowledge by drawing on current knowledge.

Another problem particularly associated with the stage perspective adopted by the literature of absorptive capacity is that it is not very clear how we should define exploration given that “exploitation” (Zahra & George, 2002) is a sub-process of absorptive capacity. As per Rothaermel and his colleagues, can we understand earlier stages of absorptive capacity, including acquisition, assimilation, and translation, as exploration? This sounds reasonable, but we may endanger the theoretical distinction between absorptive capacity and organizational ambidexterity. Alternatively, one may argue that absorptive capacity, or the organizational capability to acquire external new knowledge, is an organizational capability to explore. Some scholars (Lavie, 2006; Lewin, Long, & Carroll, 1999) actually identify absorptive capacity as an important antecedent of exploration. If we follow them and characterize absorptive capacity and exploration as sequential, the last stage of absorptive capacity, or “exploitation” (Zahra & George, 2002), should prime the next round of exploration, which contradicts the way, in the stage perspective, exploitation is defined to follow exploration.

**Operationalization of constructs:** Another shortcoming that we identify with the



stage perspective is that scholars excessively emphasize a sequence of activities while they fail to present rational and convincing arguments in support of their approach to operationalize exploration and exploitation. For example, Rothaermel and Deeds (2004) operationalize exploration with “alliances that focused on basic research, drug discovery and development” (p.209) while exploitation is coded by “alliances that were targeted towards commercialization (clinical trials, FDA regulatory processes, and marketing and sales)” (pp.209-210). Yang et al. (2014) operationalize exploration with alliances focused on “drug discovery and development” (p.151) and exploitation with “manufacturing and marketing” alliances. Apparently, upstream activities of the value chain may not necessarily be exploratory because basic research can be conducted with an intention to utilize current knowledge for commercial purposes. Likewise, downstream activities of the value chain are not always exploitative as marketing and selling to new groups of customers may call for the search for new knowledge and information. Furthermore, the knowledge and information utilized in downstream activities (for example, manufacturing) are not necessarily outcomes explored in upstream activities, for example, through research and development (R & D). Rothaermel (2001) and Rothaermel and Deeds (2004) refer to Koza and Lewin (1998) who closely follow March (1991) by characterizing the locus of exploration as “new opportunities” (256) and the locus of exploitation as “existing capability”. Such a clear (and appropriate) distinction between the loci of exploration and exploitation is replaced with the distinction between functional activities, without a clear and convincing rationale for operationalizing exploration and exploitation.

Performance implications: By operationalizing exploration and exploitation with functional activities, Rothaermel and his colleagues downplay the distinction between exploration and exploitation in terms of appropriate competitive environments or time frames. Put differently, they downplay the theoretical foundation underlying the association between the constructs of exploration and exploitation and organizational adaptation. Consequently, under the stage perspective, the rational explanation associating exploration or exploitation with organizational performance becomes difficult.

Although scholars discuss one critical distinction between exploration and exploitation by distinguishing between the degree of risk and uncertainty associated with exploration and exploitation (Rothaermel, 2001), the extent to which organizations pursue risky and uncertain initiatives *per se* does not determine the degree of organizational performance. One may argue that the proper sequence is critical for favorable performance. Although it is undoubtedly important to maintain a smooth and complete sequence of organizational activities, it does not mean the sequence *per se* ensures competitiveness.

Unlike in the choice perspective, little attention is paid to the characteristics of competitive environments in which organizations can effectively explore or exploit. Scholars unconditionally characterize (and define) exploration and exploitation as positive contributors for organizational performance. Favorable organizational performance is attained no matter what type of knowledge is explored. Any fruits of exploration, i.e., knowledge and opportunities, should be exploited for favorable organizational performance. By definition, exploration and exploitation complement each other, enabling a positive performance contribution for those organizations that explore as well as exploit.

This problem is shared with those who conceptualize “exploitation” (Zahra & George, 2002) as one of the sub-process of absorptive capacity. Scholars argue that absorptive capacity (and therefore, “exploitation” (Zahra & George, 2002) as well) enables favorable organizational performance, but their rationale may not be thoroughly grounded in theoretical reasoning. Their underlying assumption is that absorbing external knowledge positively contributes to organizational competitiveness as competitive environments continuously change. In other words, effective adaptation to environments ensures performance contributions of absorptive capacity. The validity of the underlying assumption should be thoroughly examined because the authors do not examine the value of absorptive capacity under less dynamically changing competitive environments.

Another problem we face when we examine organizational performance from the stage perspective is the inconsistency in its unit of analysis. Organizations sometimes exploit knowledge or opportunities gained as a result of the exploration done by other organizations, for example through licensing or alliances. In such contexts, exploration and exploitation are conceptualized at the level of allied organizations, or the whole industry. On the other hand, organizational performance is usually examined at the level of an individual organization. This raises a serious concern about the consistency in the unit of analysis if the performance results of a group of organizations, or of the industry as a whole, are erroneously attributed to a particular organization.

Implications for research: Finally, scholars who employ the stage perspective define exploration and exploitation as distinct stages of one sequence of organizational activity, thereby negating the possibility of the trade-off between exploration and exploitation, or the challenges of simultaneously pursuing both. By definition, exploration and exploitation should be conducted as parts of one sequence. Exploration does not exist without exploitation, and *vice versa*. Accordingly, this perspective is incompatible with the study of organizational ambidexterity, or the efforts of scholars to examine how organizations overcome the trade-off relationship between exploration and exploitation. Therefore, it is inappropriate to apply the stage per-

spective to ambidexterity research.

It is obviously possible to examine the trade-off relationship between (and thus measures to simultaneously pursue) the stages of exploration and exploitation across multiple projects. However, this contradicts the theoretical assumption that the locus of exploitation is identical to that of exploration. It is inappropriate to consider the exploratory stage of project A and the exploitative stage of project B as sequential because they are concerned with different sets of knowledge. Defining exploration and exploitation as parts of a single sequence excludes the possibility of considering them as contradictory.

#### **IV. Some Examples of the Problem Arising from Confusing the Two Perspectives**

We have discussed the two perspectives for conceptualizing exploration and exploitation, including the characteristics, validity, and shortcomings of each perspective. Given the explicit differences between the two perspectives, mixing them together or employing them interchangeably is potentially confusing and is therefore problematic. Below we show some examples of this in the literature.

First, with the stage perspective, the constructs of exploration and exploitation can easily be obscured, or inappropriately interpreted with the characteristics of differential functional activities. Yang et al. (2014) empirically examine the influences of *exploration alliances* and *exploitation alliances* on organizational performance in the context of small firms in the U.S. biopharmaceutical industry. They operationalize *exploration alliances* with those targeted for upstream activities of the value chain, including “drug discovery and development” (p.151). Likewise, downstream activities of the value chain, including “manufacturing and marketing” (p.151) are employed to operationalize *exploitation alliances*. They unfortunately fail to provide convincing arguments in support of their approach to operationalize exploration and exploitation. The authors argue that small firms gain more from *exploitation alliances* with large firms than from *exploration alliances* with large firms because exploitation enables small firms “well-defined returns” (p.148) whereas *exploration alliances* are risky and uncertain. In other words, the rationale behind their argument is the differential risk and uncertainties associated with exploration and exploitation. Given that high risk is generally compensated with high returns (albeit very infrequently), while low risk only enables low returns, their rationale fails to provide a convincing enough argument on the returns expected from exploration and exploitation. Although it is true that exploitation and exploration can be differentiated by their degree of associated risks and uncertainties, a more important distinction in the context of Yang and his colleagues’ work is whether or not the resources of allied

firms are complementary. In *exploitation alliances*, resources of small firms, who generally focus on upstream activities, are complementary to resources of large firms because large firms generally focus on downstream activities. On the other hand, resources of allied firms are redundant in *exploration alliances*, thereby enabling only limited performance benefits. Whether small firms choose to ally with large firms in downstream activities or upstream activities influences their firms value (i.e., the dependent variable discussed by Yang and his colleagues) through the mechanism of resource complementarity, rather than by differential risk profiles. In other words, small firms benefit from *exploitation alliances* not because the alliance is exploitative (or certain and less risky) in its nature, but because the authors define alliances that enable resources complementarity as *exploitation alliances*. This is obvious if we consider the case of small firms who focus their resources in their downstream activities such as manufacturing or marketing. It would be unlikely that they expect to gain more from allying with large firms in downstream activities. Accordingly, this is a good example of how easily the stage perspective obscures the theoretical differences between exploration and exploitation. By operationalizing exploration and exploitation with functional activities along the value chain, the stage perspective dilutes the unique and distinctive characteristics and replaces them with more mundane, functional differences, such as the differences in associated resources.

Secondly, mixing the choice perspective and the stage perspective endangers the distinction between exploration and exploitation. Foss et al. (2013) examine the relationship between the extent to which a firm uses external knowledge sources and *opportunity exploitation*. The authors employ the stage perspective when they define “opportunity exploitation” as “the deployment of resources, actions, and investments to realize recognized opportunities” (Foss et al., 2013:1453). They also contrast it with its preceding stage, i.e., *opportunity recognition*. “Opportunity exploitation” is operationalized as the number of new business opportunities that firms had successfully realized in the previous three years. Their empirical analysis of 536 Danish firms from various industries supports their hypothesis that the extent to which a firm uses external knowledge sources is positively associated with *opportunity exploitation*. Evidently, “opportunity exploitation” refers to exploratory activities as new opportunities are “per definition novel, and realizing them typically requires solving novel problems” (Foss et al., 2013:1456). Therefore, it is not surprising that the benefits of external knowledge sources are not limited to *opportunity recognition*, but engender effective “opportunity exploitation” too. This is logical because Foss et al. (2013) use the term “exploitation” interchangeably with “realization”. However, this is quite confusing because Foss et al. (2013) implicitly employ the choice perspective along with the stage perspective. They remind of the mutually

contradictory relationship between exploration and exploitation when they frame their finding that “opportunity exploitation” and “opportunity recognition” share the identical enabler as novel and interesting, thereby suggesting that “opportunity recognition” and “opportunity exploitation” are distinct from each other. Sharing identical enablers is surprising exactly because (and only when) “opportunity recognition” and “opportunity exploitation” are conceived as distinctive alternatives. Furthermore, it is also confusing because exploitation occurs within exploratory activities like capitalization of new business opportunities. It would be difficult to explain the differences between exploration and exploitation. In short, mixing the choice perspective and the stage perspective endangers the distinctiveness of the constructs of exploration and exploitation.

Lavie, Kang, and Rosenkopf (2011) is an example of the inappropriate application of the stage perspective to the research on organizational ambidexterity. Lavie et al. (2011) introduce the concept of “domain,” or a discrete field of organizational activity (p.1518), to define aspects along which exploration and exploitation are identified. As their empirical context is alliances in the software industry, they define two domains, including functional activities targeted by the focal alliance and the structural characteristics of the focal alliance (i.e., whether partner firms are existing alliance partners or not). The function domain closely follows the stage perspective by defining R & D alliances as exploration and alliances targeted to marketing, service, production, or supply as exploitation. The structural domain adopts the choice perspective as it dichotomizes existing alliance partners and others. Although the authors argue that their sample firms pursue exploration and exploitation across (rather than within) domains for performance benefits, it is not very clear how the combination of exploitation in a stage (for example, manufacturing alliances) and exploration in a choice (for example, exploring a new alliance partner) enable favorable performance. The choice (as defined by the choice perspective) and the stage (as defined by the stage perspective) are incompatible with each other, in that they define accompanying knowledge and information in different dimensions. Accordingly, even if firms combine exploration and exploitation across the choice perspective and the stage perspective, they are not necessarily able to expand the types of competitive environments or time frames they can effectively adapt to. The authors properly argue that it is unlikely that exploration in one domain and exploitation in another domain are in a trade-off relationship, but it at the same time means that no adaptive benefits can be expected either.

In addition, it is doubtful whether the trade-off relationship across domains is less substantial than the trade-off relationship within a domain. This is an important assumption underlying the authors’ argument, but the validity of the assumption is doubtful, particularly when one considers the function domain. As we discussed

above, different functional activities are not necessarily in a trade-off relationship with each other, because the upstream and downstream activities contribute to organizational performance only when they are appropriately combined together. It is true that time and resources spent for R & D alliances (or functional exploration) may indeed be unavailable for manufacturing alliances (or functional exploitation), but such general resources are also competed for by alliances within the same functional activities, raising the question of whether this should be considered a trade-off. Rather, functional activities build on each other: alliances in the upstream activities enable alliances in downstream activities. Therefore, given the differences in the types of knowledge utilized for distinct functional activities, the trade-off relationship may not be as strong as the authors argue. In short, the authors superficially employ the proposition that simultaneous pursuit of exploration and exploitation enables favorable performance, in that they did not examine the actual mechanism through which firms enhance their adaptive capability by simultaneously pursuing exploration and exploitation across domains. Furthermore, the stage perspective is inappropriately applied to research on organizational ambidexterity, which is grounded on the rationale closely associated with the choice perspective.

### **V. Toward a Further Development of Research on Exploration and Exploitation**

The last section concludes this manuscript by proposing implications of the foregoing argument for further development of the research on exploration and exploitation.

Ideally speaking, scholars should employ different terms for exploration and exploitation under the stage perspective from those under the choice perspective. For example, “exploitation” (Zahra & George, 2002) can be rephrased as “application” following the original work by Cohen and Levinthal (1990). It also may be appropriate to use “realize” to mean the organizational efforts to use the results of preceding exploration commercially. As we argued above, the stage perspective diverges from the choice perspective and from the essence of the exploration / exploitation constructs as originally defined by March (1991). Accordingly, we need to differentiate the stage and choice perspectives so that we can avoid confusion between them. At the very least, scholars should be explicit about which perspective they employ when they use the terms of exploration or exploitation.

Scholars should also employ the perspective that is appropriate for the purpose of their research. The choice perspective is appropriate when organizational performance is examined by focusing on organizational adaptation to competitive environments. The stage perspective may be appropriate and useful to deepen our under-

standing of the process of knowledge absorption. On the other hand, the stage perspective is particularly inappropriate and confusing for research on organizational ambidexterity, as we illustrate above.

Finally, it is important to make explicit the locus of exploration or exploitation. The critical distinction between the choice perspective and the stage perspective is whether the loci of exploration and of exploitation are identical. Scholars can ensure that they do not confuse the two perspectives by explicitly identifying the loci of exploration and exploitation in question. Sometimes it may be challenging to specify these, but scholars can gain much by properly addressing this challenge.

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