ORGANIZATIONAL AGILITY: WHAT IT IS, WHAT IT IS NOT, AND WHY IT MATTERS

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ABSTRACT

Organizational agility—defined loosely as a combination of flexibility, nimbleness, and speed—is increasingly regarded as a source of competitive advantage in today's fiercely competitive and fast changing markets. We aim to tighten and explicate a conceptualization of organizational agility that clarifies what it is and what it is not. We theorize that agility is a bi-dimensional concept that involves a change in (a) magnitude of variety (i.e., flexibility) and/or (b) rate of variety generation (i.e., speed) in a firm's product and service offerings for sensing and responding to environmental changes. We posit three strategic movements that reveal distinct avenues for competitive advantage based on a firm's agility: (1) focusing on flexibility or speed as dominant objectives, (2) oscillating between flexibility and speed constrained by tradeoff frontiers, or (3) breaking through tradeoff frontiers to simultaneously increase flexibility and speed. We discuss limitations and boundary conditions of our thinking, offer a typology of agile organizations for further theoretical and empirical development, and observe a need for better operationalization of the agility construct.

Keywords: agility, organizational change, organizational learning

Continuous change is increasingly the new normal rather than the exception in contemporary organizations (Brown & Eisenhardt, 1997). As a result, interest in organizational agility has grown exponentially for practitioners and researchers (Tichy & Charan, 1989; Tallon & Pinsonneault, 2011). There is little disagreement that agile organizations, loosely characterized as those exhibiting higher flexibility, nimbleness, and speed, effectively manage the challenges of continuous change: they are neither so structured that change is subdued nor so unstructured that change is rampant; rather, such organizations can purposefully alter the foci, magnitude and rate of change without falling prey to either chaos or inertia (Adler, Goldoftas, & Levine, 1999; Sarker & Sarker, 2009; Grewal & Tansuhaj, 2001; Tallon & Pinsonneault, 2011). Despite attention and agreement, the concept of organizational agility has received neither a consistent treatment in the literature nor a coherent typology or theory of its meaning (i.e., what it is) and significance (i.e., why it matters) to guide a systematic program of research. Instead, agility has remained an elusive 'faddish' concept with broad and sometimes disparate definition and application across a wide range of organizational contexts.

We aim to fill the void by providing a critical review of the literature to distill what agility is and what it is not. We conceptualize that agility is best viewed as an organizational *capacity* to produce change along two dimensions that are posited to be typically in tension: (1) magnitude, and (2) rate of variety change that allows an organization to *move* with flexibility and speed relative to its competitors. To crystallize the notion of movements as a function of the firm's sense-response pairs, we utilize the proposed bi-dimensional space defined by magnitude and rate of variety change to propose three prototypical movements for gaining competitive advantage that are central to conceptions of organizational agility: (1) focusing on flexibility or speed as dominant mechanisms, (2) oscillating between flexibility and speed constrained by

frontiers set by magnitude-rate tradeoffs or (3) breaking through magnitude-rate tradeoffs to simultaneously increase flexibility and speed. Building on the proposed prototypical movements, we also develop a typology of agile organizations that can form a foundation for developing a theory of organizational agility that explicates its mechanisms, antecedents, and consequences.

We divide the article into three parts. First, we discuss the concept of agility, its historical uses, and provide a literature review to identify common themes and an emergent definition of agility. Second, we identify gaps and inconsistencies in the literature to frame opportunities to bolster the emergent definition of organizational agility by conceptualizing magnitude-rate interdependence and drawing a capacity-capability distinction. Finally, we conclude with a discussion of the limitations and boundary conditions of our thinking and offer a typology of agile organizations for further theoretical and empirical development and note the need and opportunity to formulate a better operationalization of the construct.

ORGANIZATIONAL AGILITY: HISTORIC ORIGINS AND EVOLUTION

Uses of the term "agility" in the management discourse emerged in metaphorical form in the late twentieth century.[1] Around the same time, an agile approach began to rise in prominence in software development resulting in the publication of the Agile Manifesto in 2001.[2] In the last two decades organization theorists have also explicitly considered the role of agile performance in enabling firms to successfully adapt to fast changing and unpredictably disruptive environments (e.g., Adler et al., 1999; Grewal & Tansuhaj, 2001; Judge & Miller, 1991; Smith &

[1] The agility concept can be traced to Jack Welch's interview with Noel Tichy and Ram Charan (1989). Mr. Welch spoke about leadership imperative to cultivate organizational focus on "speed, agility and simplicity." We used this article as the starting point of research of agility in management.

[2] Proposed by 17 leading software developers and consultants, the agile manifesto emphasizes four principles that set new priorities in preferring: (1) individuals and interactions over processes and tools, (2) working software over comprehensive documentation, (3) customer collaboration over contract negotiation, and (4) responding to change over following a plan (Craig 2004).

Zeithaml, 1996). This has coincided with the rise of hyper competition as a cornerstone of the contemporary industry landscape (e.g., Bourgeois & Eisenhardt, 1988; D'Aveni, 1994). More recently, researchers have evoked agility to describe and explain organizational responses in contexts as diverse as information systems (Sarker & Sarker, 2009), market orientation (Grewal & Tansuhaj, 2001), strategic alignment (Tallon & Pinsonneault, 2011), and social computing (Li et al., 2011).

Consequently, the number of articles in the organizational discourse using the term agility or closely related terms such as strategic flexibility (e.g., Evans, 1991) and decision speed (Judge & Miller, 1991) has grown exponentially.[3] To build an intuition of common themes and identify gaps in the literature we followed procedures outlined by Shepherd and Sutcliffe (2011) to trace the meaning and conceptualization of agility. Specifically, we first conducted a broad search in the management literature (including information systems and marketing) to identify articles using agility or related terms. Our search covered scholarly and practitioner journals, and yielded more than 500 studies in the strategy, information systems, and marketing literature.[4] While the large number of articles reaffirms the broad applicability and popularity of the agility concept, it makes a thorough and systematic review prohibitive within the scope of single article. To focus our review, we narrowed our search to articles in journals with a high impact factor (> 5 for 5-year impact) which resulted in selecting articles from ten high impact management journals.[5]

[3] By related terms we mean constructs used to conceptualize organizational response in fast-paced environments. This excludes terms such as adaptability, versatility, or resilience which focus on change in response to the environment but do not explicitly consider the temporal elements (e.g. speed) of response.
[4] We searched all major business databases including EPSCOT, ABI-INFORM, Google Scholar, Scopus. The initial list of articles is available on request from the authors.
[5] The ten journals are the Academy of Management Review, the Academy of Management Journal, Management Information Systems Quarterly, the Journal of Marketing, Strategic Management Journal, Administrative Science Quarterly, Organization Science, Journal of International Business Studies, the Journal of Management, and the Journal of Retailing.

To supplement this set with other potentially significant contributions we used a snowballing technique to search for articles through Google® scholar with keywords such as "organizational agility," "strategic flexibility" and "response speed." Within this set we retained articles with a citation count of greater than 100.[6] This allowed us to sample broadly from journals not included in the original list. Next, to include the practitioner view, we scanned major practitioner focused journals including the *California Management Review, Harvard Business Review* and *Sloan Management Review* between the years 1989-2010 to include articles that discuss organizational agility. We also reviewed several trade and professional books that discussed organizational agility.[7] Finally, we analyzed each selected article to retain only those for detailed content analysis that: 1) conceptualized agility *at an organizational level* and 2) explicitly referred to *agility or its related terms* as their primary topic of interest. This step distilled the list down to 25 articles that are summarized in Table 1.

Insert Table 1 about here

To content analyze the selected articles, members of the research team individually read each article to identify the: (1) construct label used, (2) construct conceptualization including definition and temporal (time) status, (3) construct dimensions (if any), and (4) construct propositions for its consequences (if any), or empirical results thereof. Team members met to resolve differences and synthesize focal content. Table 1 summarizes our synthesis of selected articles, which we discuss next to advance an emergent definition of the agility construct.

COMMON THEMES OF ORGANIZATIONAL AGILITY: AN EMERGENT DEFINITION

[6] A cut off of 100 citations was established to ensure that the article had significant impact to be included.
[7] Notable among them are Alvin Gunneson's (1997) *Transitioning Agility*, Charles Grantham, James Ware, and Cory Williamson's (2007) *Corporate Agility*, and Michael Hugos' (2009) *Business Agility*.

Several common themes emerge from a review of Table 1. First, most studies define agility as a specific set of organizational sense-response actions that are typical for organizations operating in an environment characterized by turbulence, unpredictability, and rapid change. For example, Nadkarni and Narayanan (2007: p. 245) draw on Sanchez (1995) to specify organizational sense-response as an ability to "precipitate intentional change" that involves rapid shifts in "strategic actions, asset deployment, and investment strategies." Tallon and Pinsonneault (2011: p. 464) conceptualize agility as an organizational ability to "detect and respond to [environmental] opportunities and threats with ease, speed, and dexterity." At its core, most studies view agility as intentional change such that ad hoc and unsystematic sense-response actions are not indicative of agility regardless of how well they portray agility-like traits. Rather, agility is specified as persistent, systematic variations in an organization's outputs, structures or processes that are identified, planned, and executed as a deliberate strategy to gain competitive advantage (Tallon & Pinsonneault, 2011).

Second, an emergent consensus is that sense-response actions deemed agile can be specified using a bi-dimensional concept of *magnitude* of variety change (flexibility) and *rate* (speed) of generating variety change. The magnitude of variety change defines the structural dimension of change and involves the degree to which a firm is able to *change* the level of *variety generation* in its products, processes, services, or practices. For instance, Apple's iPhone 5 enhanced the magnitude of variety in its product offering over iPhone 4S by increasing the display by 12.5% (3.5 to 4in), storage by 100% (32 to 64GB), camera quality by over 50% (5Mp to 8Mp, 720p to 1080p) and bolstering cellular connectivity from GSM/CDMA to LTE (Vascellaro, Scheckner, & Ante, 2012). With rare exceptions, definitions of agility associate higher agility with greater magnitude of variety generation; firms that can generate higher variety

are deemed more agile. In this sense, the magnitude of variety as defined is consistent with Ashby's law of requisite variety (Ashby, 1956), and related ideas in complexity theory (Anderson, 1999; Andriani & McKelvey, 2009). The variety itself is operationalized in multiple ways including the decision alternatives generated (Judge & Miler, 1991), different strategies deployed (Evans, 1991; Volberda, 1996; Nadkarni & Narayanan, 2007; Conboy, 2009), new products and lines introduced (Sanchez, 1995; Sanchez & Mahoney, 1996), non-routine tasks added to the repertoire of routine tasks (Adler et al., 1999), and product variations offered (Worren, Moore, & Cardona, 2002).

Agility's second dimension—*rate* of variety change—defines the temporality of change and relates to the change in variety per unit of time. In other words, rate involves the time taken to sense and execute a given change in the magnitude of variety. Conboy (2009) emphasizes this dimension in agility by noting that the consideration of speed of change (in addition to magnitude) makes it distinct from other concepts used to characterize sense-response pairs such as strategic flexibility, and by extension, mindfulness and resilience. With few exceptions, definitions of agility associate higher rate with greater agility. For instance, to understand Apple's agility as indicated by its release of iPhone 5 requires consideration of not only the magnitude of variety change in its product offering (as discussed above), but also that this variety change was generated in about 11 months following the release of iPhone 4S (October 4, 2011 to September 12, 2012). By contrast, Samsung took 15 months between its release of Galaxy S3 and Galaxy S2 smartphones (February 2011 to May 2012)[8].

The operational indications of rate, however, vary significantly across studies referring most often to either sense or response speed such as *increased* rate of producing variety (Worren

[8] Samsung released Galaxy S3 in 28 countries in Europe and Middle East on 20 May 2012, and in the United States not until 20 June 2012 (http://en.wikipedia.org/wiki/Samsung_Galaxy_S_III).

et al., 2002), *rapidly* recalibrating strategies (Evans, 1991), *high speed* of response (Bahrami, 1992; Sanchez, 1995; Volberda, 1996), *reduced* cycle times (Adler et al., 1999), moving more *nimbly* (Raynor & Bower, 2001), exhibiting *speed* and *surprise* (Sambamurthy, Bharadwaj, & Grover, 2003), or *speed* of recognizing opportunities (Shimizu & Hitt, 2004).

Third, past studies view agility as conditional on environmental (industry) conditions.[9] For instance, Smith and Zeimthal (1996) refer to "uncertain environments," Volberda (1996) refers to the notion of "high variety" environments, while Grewal and Tansuhaj (2001) consider "high risk" environments. Different environments exhibit varying levels of market turbulence, competitive intensity, and customer need heterogeneity indicating the need to examine organizational agility relative to comparable firms within a specific industry or environment (Grewal & Tansuhaj, 2001; Nadkarni & Narayanan, 2007). As a result, to calibrate an organization's agility implies identifying its *relative* position in a *specific* environment; that is, its ability to generate higher magnitude and rate of variety in its sense-response actions vis-à-vis its set of competitors and the characteristics of the environment.

Fourth, Table 1 suggests that the likelihood of observing a positive effect of agility on, for example, financial performance (e.g., revenue growth, profitability) or strategic performance (e.g., efficiency, innovation; Grewal & Tansuhaj, 2001) is greater in fast-changing environments (Nadkarni & Narayanan, 2007). Conversely, agility has been found to be detrimental to firm performance in slow velocity (Nadkarni & Narayanan, 2007) and high demand environments (Grewal & Tansuhaj, 2001). Thus, whether agility leads to improved firm performance is dependent upon the characteristics of the environment.

[9] Because the industry boundaries are blurring we use the term here in very generic ways covering any market, business ecosystem or environment where competition unfolds (Teece, 2007).

In sum, past literature suggests that organizational agility can neither be reduced to a singular dimension nor is it appropriately calibrated in absolute terms. The emergent consensus is that agility is appropriately synthesized in terms of the four key points discussed above, and defined formally as follows:

Organizational agility is the ability of a firm to sense and respond to the environment by intentionally changing (1) magnitude of variety and/or (2) the rate at which it generates this variety relative to its competitors.

This definition purposely excludes organizational consequences, the conditions that make these consequences more likely, as well as the capabilities that are conducive to and promote the development of organizational agility. These questions are best examined as structural and/or process issues that inform how organizations build agility and extract rents from it; both are separate from the conceptualization of the agility as a specific emergent organizational property.

GAPS AND OPPORTUNITIES IN THE AGILITY LITERATURE: BOLSTERING THE EMERGENT DEFINITION

The convergence around an emergent definition of agility masks several gaps and inconsistencies in the current literature. We view these gaps and inconsistencies as opportunities for bolstering the emergent conceptualization, and thereby moving toward a more robust theory of organizational agility. To identify and exploit these opportunities, we organize the gaps in the literature into three main concerns: (1) magnitude-rate interdependence; (2) antecedent-construct separation; and (3) deciding-doing distinction. In so doing, we develop several propositions for future research, and close this section with an enhanced conceptualization of the agility construct.

Magnitude-Rate Interdependence: The Inherent Tension of Agility

While a majority of past studies concur that magnitude of variety and rate form the core dimensions of agility, the literature presents a confusing and equivocal conceptualization of how these dimensions relate to one another and *together* constitute the agility construct. To wit, some researchers combine both dimensions as formative inputs into a single additive agility construct (Grewal & Tansuhaj, 2001) implying that these dimensions are largely unrelated. Others argue that agility is best viewed as an overarching latent construct without necessarily defining relationships between the magnitude and rate dimensions (e.g., Adler et al., 1999). Still others conceptualize agility as a higher-order construct with magnitude and rate as first-order reflective factors suggesting that these dimensions are adequately correlated (positively) to identify a common latent construct (Bahrami, 1992). Finally, a few researchers prefer greater construct complexity by contextualizing agility within a specific class of actions (e.g., modify or exit current alliance, Young-Ybarra & Wiersema, 1999), or specific organizational functions (e.g., customer relations, business partnerships, and operations, Tallon and Pinsonneault, 2011).

The diversity of approaches available to constitute agility masks a fundamental tension in the construct that parallels March's (1991) exploration-exploitation dichotomy: (1) an increase in the *magnitude* of variety involves increasing the variance in products, services, processes, or practices, which is akin to exploration, while (2) an increase in the *rate* of variety involves focusing on efficient execution, which is akin to exploitation. As such, these processes are contradictory or opposing in their effects and conditions, and indicative of well-known dichotomies expressed in organic/mechanistic, innovation /productivity, effectiveness/efficiency, generative/adaptive and other popular contrasts (Adler et al., 1999). Volberda (1996), one of the few to explicitly discuss the tradeoff between magnitude and rate dimensions, theorizes that only some magnitude-rate combinations are adaptive or permissible (e.g., high variety-low speed, low

variety-high speed), while the high variety-high speed combination constitutes a 'revolutionary' change that will fundamentally disrupt organizational structures and processes making it highly risky, unlikely and infrequent. Nevertheless, others observe that organizations can seek to simultaneously increase magnitude of variety and rate by effectively navigating the underlying tension (Smith & Lewis, 2011). Yet, past research has neither fully recognized this tension, nor identified the associated organizational challenges and abilities for building agility.

To clarify the interdependencies between magnitude of variety (y-axis) and rate (x-axis), we introduce "agility isocurves" as representations of the inherent tradeoffs between each dimension (Figure 1).[10] Along any given isocurve, different points represent different combinations of magnitude and rate of variety that are agility equivalent. Specifically, points indicating higher magnitude of variety come at the cost of lower rate (e.g., organization A in Figure 1) while points with higher rate of variety are concomitant with lower magnitude of variety (e.g., organization B in Figure 1); yet, organizations A and B are equivalent in terms of their relative agility, but are agile in different ways. Accordingly, organizations that are located further away from the origin exhibit higher magnitude and/or rate of variety and, thus, are more agile than those who are located closer to the origin.

Insert Figure 1 about here

To be clear, the notion of an agility isocurve is an analytical representation of the observed tension between agility dimensions not a presumption of inevitable or immutable tradeoffs. Highly agile organizations may successfully break through their current magnitude-

[10] This could also be formulated in calculus, but we will bypass this as the exact mathematical formulation of the phenomenon is not our main purpose here. Suffice to say that magnitude and rate of variety change are expected to exhibit a negative association indicative of tradeoffs, and the curvature of the isocurves is proportional to the observed negative association.

rate tradeoffs by shifting their tradeoff curve upwards (to the Northeast) thereby securing competitive advantage over firms that remain stuck in lower level isocurves. Thus, we offer the following proposition for the relationship between the agility dimensions.

Proposition 1:*Organizational agility involves intentional change along two distinct and interdependent dimensions: (a) magnitude of variety of a firm's offerings, and (b) rate of variety, such that (c) changes in magnitude of variety are nonpositively (poorly or negatively) associated with changes in rate of variety.*

Using the preceding notion of magnitude-rate interdependency, we posit that organizational agility is best understood in two distinct ways: either as 1) a *location* or 2) a *movement* in the bi-dimensional agility space. These concepts result in different theoretical formulations of agility and have distinct strategic consequences. Agility as a *location* is based on the idea that, at any given point in time, an organization's agility can be conceptually represented by a specific point—or location—in the bi-dimensional space. Each location in the agility space defines thus *an instance* of an agile sense-response action that an organization exhibits at any time ***t***. Typically, this point is along or below the organization's current agility isocurve.

Agility as *movement* is conceptualized as a shift in an organization's location in the agility space between two time periods ($\boldsymbol{t}_1 \rightarrow \boldsymbol{t}_2$) corresponding to separate sense-response pairs. That is, an agile movement is represented by the distance between two consecutive sense-response pairs enacted by an organization, and the direction associated with this shift. As per this conception, agility is more about the properties of repeated sequences, not properties of one-shot, intentional change efforts. Indeed, a focus on agile movements renders a location based definition of agility less compelling. Conceptualizing agility as location hinders observations of how a firm over time increases *and/or* decreases magnitude and/or rate through consecutive

competitive actions necessary to orchestrate continuous change. Hence, a single instance of observed agility performance (i.e., location) is an incomplete and fallible indicator of the organization's agility such that agility is indicated by changes in magnitude and rate over time (i.e., movements) relative to competition.

Moreover, regardless of the direction of movement considered, the range (e.g., how far) and ease (e.g., how efficiently) a firm is able to move between two locations of consecutive sense-response pairs is a meaningful and component of organizational agility. Organizations that evidence larger range (e.g., cover larger distance in the agility space) and greater ease of consecutive movements (e.g., expending lower effort or cost relative to their competition) are posited to be relatively more agile. For instance, between January 2007 and September 2012, Apple executed five distinct movements (shifts) with each movement associated with a new version of iPhone (e.g., iPhone to iPhone 5) where each movement represented a specific choice of magnitude and rate of variety change (sometimes increasing variety, sometimes decreasing variety such as 4 → 4S; but always with higher rate). Thus we propose

Proposition 2: *Organizations exhibiting comparatively greater range and ease of movements in the magnitude-rate space over consecutive change initiatives in a given period of time are relatively more agile.*

This interpretation also shifts our attention to focus on specific types of movements in the space outlined in Figure 1 and to theorize about key features found in each. While in practice a multitude of diverse movement configurations are plausible, three prototypical categories of agility movement are particularly relevant for theory development as they identify boundary conditions for organizational agility and facilitate further theorizing of its antecedents,

mechanisms and consequences. Specifically, we will distinguish: 1) horizontal/vertical shifts, 2) shifts along isocurves, and 3) diagonal shifts (see Figure 1).[11]

The first category of *horizontal/vertical shifts* focus on situations where one of the dimensions of agility is kept more or less constant while the other is allowed to vary either 'vertically' (north) or 'horizontally' (east). Vertical shifts indicate the organization's focus on innovating products and services that change the magnitude of variety while maintaining a constant rate of variety change. For example, in a study of large R&D projects, O'Connor (1998) found that successful breakthrough innovations with significant increments in variety invariably involved attention to learning related to markets, customers, and competitors. By contrast, horizontal shifts expect organizations to significantly accelerate the introduction of new products and services while maintaining a constant rate of change in the magnitude of variety. In this case, increases in speed and associated efficiency are given priority over shifts in magnitude of variety. For another example, in a study of the U.S. and U.K. home appliance industry, Worren et al. (2002) demonstrate that product modularity—the act of decomposing a product into standardized, semi-independent components with well-defined interfaces—significantly reduced cycle times thereby increasing the rate but constraining changes in product flexibility.[12]

In the second prototypical category, movements along the tradeoff frontier require organizations to change *both* magnitude and rate of variety. This occurs when organizations flexibly increase the magnitude (rate) of variety change while concurrently decreasing the rate (magnitude) of variety change or vice versa (Benner & Tushman 2003; Gupta, Smith, & Shalley,

[11] Especially market innovators and adaptive organizations are specialized into local movements along the isocurve in their region. This, however, is a specialized case of local movements discussed below.

[12] Improvements along these dimensions are not necessarily constrained to one class of moves by organizations. In fact, organizations typically 'zig zag' in their response pairs through vertical and horizontal movements balancing over time their exploratory and exploitative responses (Brenner and Tushman xxx; Lambe and Spekman 19xx).

2006). To conclude that movements along the same agility isocurve do not represent a potential for competitive advantage is to commit a location-movement fallacy. Two organizations, say A and B, at two different locations on the same isocurve do not differ in terms of their location based agility. However, these organizations may evidence different agility for movements such that A may be able to move more easily to cover significantly larger distances on the isocurve than B, or to cover the same distance with less effort. As an illustration, Adler et al. (1999) showed how NUMMI—a Toyota subsidiary located in California—was able to move between greater product variety and speed of implementation during two model changes and gain advantage over its competitors. In this sense, an agile movement is the "distance-of-indifference" around an organization's current location within which it can travel easily when the strategy so demands. An organization with a smaller "distance-of-indifference" is relatively less agile even when it is located on the same isocurve as another.

Finally, the third category involves diagonal shifts that break through existing tradeoffs by *simultaneously* increasing magnitude and rate. Such moves are rare and not easily imitable at least in the short-term- in the industry. Typically they are offsprings of new disruptive technological processes, digitalization and related investments in complementarities or new forms of co-specialization (Teece, 2007). For example, in a study of the glass making industry, Anderson and Tushman (1990) found that movement to a new tradeoff frontier is the result of both competence enhancing (e.g., introduction of machine cylinder for augmenting existing glass making practices) and competence destroying processes (e.g., introduction of computer aided design machines, which required entirely new design practices). That is, this combination of competitive actions enabled firms to increase their variety by competency destruction while

simultaneously speeding up by competency enhancements thus achieving a series of changes characterized by both high magnitude and high rate (on a new isocurve).

Based on the preceding, we offer the following proposition that is useful for calibrating organizational agility as a set of specific types of movements.

Proposition 3: *Organizations that (a) increase their rate faster than their competitors when magnitude of variety between competitors is constant; or (b) increase their magnitude of variety more than their competitors when rate of variety between competitors is constant; or (c) increase their magnitude of variety while decreasing their rate (or vice versa) with greater ease than their competitors; or (d) simultaneously increase their magnitude and rate of variety beyond that achievable by their competitors over consecutive change initiatives in a given period of time are relatively more agile.*

Antecedent-Construct Separation: A Capability-Capacity Distinction of Agility

Past researchers have been equivocal about defining agility as a capacity, capability, or both. This is partly because most studies do not distinguish between capacity and capability, but rather intuitively recognize them as separate constructs. A variety of terms (e.g., ability, mechanism, routine, metacapability, dynamic capability) are used interchangeably to describe the enabling mechanisms of agility as well as the bounded potential of agility. For instance, Matusik and Hill (1998) define agility as capability by specifically pointing out a set of activities that determine agility (e.g., configure internal structures, change contractual obligations). Likewise, other researchers explain agility in terms of dynamic capabilities (Zhou & Wu, 2010), or meta-capabilities (Doz & Kosonen, 2010), while still others approach agility as a narrowly defined organizational capability for generating response variety and/or increasing response speed (e.g., Adler et al., 1999; Tallon & Pinsonneault, 2011). In a different vein, Evans (1991)

refers to agility as a capability while also alluding to it as a capacity "to generate variety to respond to the unexpected and mutate into new forms to fit the contingency of the situation." Overall, about 74% of the articles we reviewed conceptualize agility as a capability while only 59% defined agility as capacity. Those who included both dimensions in their definition were a significant minority of only 22%.

We observe that a clear and consistent distinction between agility as a capacity and capability is critical for systematically theorizing about agility and its associated processes. Consistent with Cohen and Levinthal's (1990) well-known conception that organizations may have more or less absorptive *capacity* (Zahra & George, 2002), we posit that organizations may possess more or less capacity for agility that is initially bounded by the firm's upper limit on the range of movements in the bi-dimensional magnitude-rate of variety space as discussed.[13]

More precisely, an organization's agility capacity is defined by the region in the bi-dimensional magnitude-rate space within which it can execute competitive actions (see Figure 1). This notion of agility capacity as a region extends the concept of movements (defined above) to the *potential range* of *movements in a region*, referred to as the "region-of-indifference" (building on prior concepts of "distance-of-indifference") that an organization could execute upon demand at any given point in time. Over time, organizations may expand this region of agility capacity as they enhance their capabilities for intentional change; however, this expansion cannot be presumed. Conversely, organization's agility as capacity may falter as capabilities for intentional change deteriorate over time. At any time, organizations with greater agility capacity

[13] Other parallels of capacity include (a) in physics where for instance a battery's capacity to store electric charge is different than the electric current (i.e., charge) it actually supports in a circuit, (b) in biology where for instance the ability of an environment to sustain populations is different from the actual population at a given point in time, and (c) in chemistry where for instance the number of chemical bonds the atoms of an element can sustain is different from the actual bonds it has in a given compound.

can operate over a wider region-of-indifference in their intentional change efforts and, consequently, are represented by larger regions in the 2-dimensional agility space (see Figure 1).

Thus, a capacity conceptualization of organizational agility indicates its state of *being* agile, and distinguishes it from *capabilities* necessary for *becoming* agile. Metaphorically, this becoming-being distinction is akin to the training-endurance distinction in aggressive, fast-paced team-sports such as football, basketball and rugby where agility is prized and players have to collectively construct and execute agile performances ("plays"). Consider rugby, a sport that involves choreographed plays "where planning, elaborate schemes and deception are vital" (Clegg, 2011). In *becoming* rugby players, individuals undergo rigorous training to build not only a combination of muscle, stamina and range, but also routines for sense and response on the field that are essential for superior performance. When training is effective, players attain endurance as a state of *being*. Endurance allows the team to execute varied and complex plays on the field. Yet, no single performance completely reflects the team's endurance, nor does the team usually exhaust its endurance in any single game. Instead, teams constantly undergo training to build capabilities for better endurance capacity than their rivals; however, training does not guarantee endurance. Likewise, organizational capabilities for becoming agile are necessary for achieving a capacity for agile performances. Consequently, we posit:

Proposition 4: *An organization has greater agility capacity when its "region of indifference" in the magnitude-rate space is (a) larger than its rivals, and (b) bounded by an isocurve that is at least the same or greater distance from the origin than its rivals.*

Note that such agility capacity expresses the range of intentional change performances that an organization *could* execute, not the performances that it actually *will* execute. Choice of an observed agility performance is the result of strategic decisions tempered by bias, opportunity

payoff and cost considerations which are beyond the scope of this article. Instead, three characteristics of regions-of-indifference warrant further consideration. *First,* the upper bounds of these regions matter. Regions bounded by isocurves at greater distances from the origin relative to other regions indicate higher agility capacity though they may have similar range.

Second, the distances and direction moved between two locations in a given region matter. Organizations with similar region-of-indifference may execute movements that differ both in the direction and range. When this occurs, the organizations will exhibit different agility performance despite equivalent capacity, just as two equally competitive teams may exhibit differential performance in a given game. Conceptualizing both direction and range also allows seemingly counter-intuitive agility performances such as intentional reduction in rate of variety change for competitive diversion or deception, while ruling out those that are only superficially agile such as an unexpectedly rapid instance of sense and respond. Just as rugby players may decide to deliberately slow down their play (e.g., to disorient competition), an organization may deliberately choose to refrain from shifting variety (e.g., Nadkarni & Narayanan, 2007), or speeding up variety rate, because such changes may be overly expensive, patently premature, or competitively unattractive (Winter, 2003). Yet, the organization may seek to hold the capacity for far higher variety magnitude and/or rate in its competitive arsenal.

Third, organizations bounded by the same isocurve may nevertheless differ in the speed at which they execute similar movement shifts within their regions.[14] The time periods between observable movement shifts can sometimes be large.[15] The effort and cost involved in executing

[14] Note that increasing the rate (velocity) of variety change per unit time implies that the organization is *accelerating* the rate of variety change which, in turn, indicates that the organization is reducing the time it takes to generate the variety magnitude and/or to bring it to market.

[15] For instance, Apple released iPad on April 6, 2010, iPad2 on March 2, 2011, and iPad3 (third generation) on March 16, 2012. These dates correspond to ***t1***, ***t2*** and ***t3*** in our discussion.

movement shifts, even when the organization has the capacity for movement, are not trivial.[16] Consideration of differential execution speeds requires higher order concepts associated with agility (e.g., acceleration of variety change) as well as factors that hinder or help agility execution (e.g., costs, coordination) (Teece, 2007).

DISCUSSION, LIMITATIONS, AND CONCLUSIONS

The present study is motivated by providing a rigorous and comprehensive conceptualization of the organizational agility construct that articulates what it is, and draws clear lines of distinction with what it is not. Specifically, we develop the theoretical foundations to propose that organizational agility is (a) neither appropriately defined by strategic flexibility and related concepts nor by speed-to-market and associated concepts; rather, it is an organization's capacity for intentional "sense and response" effort to vary the magnitude and rate of variety generation in its market offerings, (b) not to be confused with either one or more organizational (dynamic) capabilities for organizational change or with market "sense and response" performance at any given point in time; rather, it is the capacity to execute on demand distinct "movements" in a two-dimensional space defined by magnitude and rate of variety, over time, and (c) less meaningful to be viewed either as a static or as "more (magnitude/rate)-is-better" property of organizations.; rather it is a dynamic construct such that organizational capacity is prone to depletion, if not regularly maintained much as human capacity for endurance. Thus, our study advances past literature and offers a theoretically grounded conceptualization of the organizational agility construct that is sufficiently fine grained and pragmatically meaningful for a systematic program of future research.

[16] Clearly, no organization can move to point that is outside its current capacity to exhibit combinations of magnitude of change and rate of change.

More specifically, we can offer a typology of organizational agility that identifies conceptually distinct categories of organizational capacities, draws out their implications, and provides more specific guidelines outlined for empirical work including operationalization of the agility construct. We view this typology of agile organizations as work in progress that is open to expansion and refinement as future researchers explore and exploit the network of concepts associated with organizational agility. We close with a list of questions to guide future research. First, however, we outline boundary conditions for the agility construct along with some limitations of our study.

Boundary Conditions and Limitations

The proposed conceptualization of agility construct is bounded by consideration of continuous change. In situations where organizations contemplate discontinuous change to leapfrog competitors, germinate new markets or break free from industry/firm patterns of sense and response, our conceptualization is less relevant. Discontinuous change can be interpreted as jumps in our magnitude-rate of variety space with no continuity. Clearly our notion of movements does not apply in this instance although our theoretical foundations may be extended to develop a discontinuous conception of organizational agility. Likewise, the proposed magnitude-rate variety space presumes that organizations can, at least theoretically, vary continuously and largely independently the magnitude and rate of variety change. Instances where changing magnitude or rate beyond a point requires new technologies, systems or configurations that create zones of infeasible operation set bounds on our conceptualization. The proposed bi-dimensional conceptualization also poses a limitation by ignoring other dimensions that may be considered as part of a broadened conceptualization of organizational agility construct such as capacity to vary the timing of market entries. We sought to strike a balance

between usefulness and complexity necessitating a lower priority to higher order of multidimensionality. Finally, our conceptualization is limited to three distinct, and prototypical movements in the magnitude-rate space. While these prototypical movements have theoretical value, empirically organizations may evidence movements of far greater variety and richness. Nonlinear, erratic and haphazard movements are anticipated. While such movements are not ruled out by our conceptualization, our theoretical contribution is limited by attention to meaningful quality of movements—hence, prototypical—rather than elucidating the vast quantity of possible movements. Nevertheless, our study offers a useful foundation for moving toward a theory of organizational agility, which we address next.

A Typology of Organizational Agility

We can unite the concepts of trade-offs, location, and movement to propose a typology with four distinct types of agility capacities that different organizations may evidence (see Figure 1). Noting that magnitude and rate of variety change can be represented as δM and δR respectively, we specify that trade-offs imply that organizations are challenged when they have to execute movements that require increasing both the magnitude *and* rate of variety change (i.e., diagonal movements where $\delta M_t < \delta M_{t+1}$ ***and*** $\delta R_t < \delta R_{t+1}$). Presumption of trade-offs is ***not*** inherently incompatible with the conception of organizational agility. To be agile is to change locations evidenced by movements in the magnitude-rate space. As such, organizations may, and often do, manage magnitude-rate trade-offs by (a) identifying their competitive strengths (i.e., magnitude ***or*** rate), (b) strategically defining how they will "specialize" or "optimize" their strength given the trade-off constraint to achieve sustainable competitive advantage (i.e., capacity region in Figure 1), and (c) focusing on a class of movements that build their capacity for agility around their competitive strengths (i.e., location-movement combinations in

magnitude-rate space). Based on the preceding, we identify four classes of organizations with different competitive strengths and capacity regions for agility as: 1) innovators; 2) disrupters; 3) adapters; and 4) indifferents (illustrated in Figure 1). We discuss each in turn.

Innovators (upper left hand quadrant, Figure 1) identify their competitive strength in identifying new opportunities and strive for the capacity for movements associated with greater magnitude of variety change ($\delta M_t < \delta M_{t+1}$), but at the cost of reduced or constant rate of change ($\delta R_t \geq \delta R_{t+1}$). These organizations tend to push their magnitude of variety change 'northwards' given the rate. Examples of such definitions abound in our literature review: For example Evans (1991) emphasizes organization's "capability to generate variety to respond to the unexpected," while Volberda (1996) talks about "capability to respond to unfamiliar changes in the environment with high variety." Overall 26% of our reviewed definitions emphasized characteristics of agile organizations that are typical for innovators.

By contrast, organizations with the capacity to produce a heightened rate of variety change ($\delta R_t < \delta R_{t+1}$), but concomitant with lower or constant magnitude of variety change ($\delta M_t \geq \delta M_{t+1}$) are referred to as "*adaptive organizations*" (lower right hand quadrant, Figure 2). Our literature review indicates reference to such organizations. For example, Sanchez (1995) highlights agility as to "respond quickly" and Conboy (2009) as "continual readiness of an [organization] to rapidly, proactively or reactively embrace change." These organizations tend to push their rate of variety change to 'eastwards' given the magnitude. About 62% of the definitions focused on agility capacity associated with this class of organizations.

Disrupters (upper right-hand quadrant, Figure 1) redefine market competition by developing capacity to overcome trade-offs by generating both higher magnitude ($\delta M_t < \delta M_{t+1}$) **and** greater rate variety change ($\delta R_t < \delta R_{t+1}$). These organizations aspire to execute movements

that break through the isocurves and move along the diagonal toward the 'northeast' quadrant. Very few studies in our literature review (c.a. 7%) recognize this category although Adler et al. (1999) do note that agile organizations are adept at "moving the efficiency/flexibility tradeoff to simultaneously pursue both" and Sambamurthy et al. (2003) make an abstract reference to "explore and exploit opportunities for innovation and competitive performance."

Finally, *Indifferents* (lower left-hand quadrant, Figure 1) are organizations that do not engage in agile based competition in the industry and they do not anticipate the magnitude or rate of variety change to be important properties of their strategic responses. By doing so, they remain indifferent to building agility capacity and exhibit only marginal and serendipitous movements with typically low levels of changes in magnitude and rate of variety. Because our literature review did not define 'non agile' organizations none of them emphasized or highlighted such characteristics.

Conclusions

In conclusionwe note several challenges in our proposed conceptualization. One of them deals with the operationalization of the construct. Most past operationalizations of agility we reviewed rest on using a perceptual measure of agile performance of a firm or unit in a specific dimension (such as market response) as seen by managers (a.k.a. assessment of current or past agility performance). Some of them may define these performances in the context of sense-response pairs that are carried out in relation to competitors. But none of them view that it is essential to distinguish agility capacity of a firm at any given time from other constructs such as its exhibited agility performance for a single sense-response pair or capability required to do so. None of them seek either to operationalize the construct accordingly as a constant characteristic of multiple sense-response pairs (and associated movements) as exhibited by the organization

over a given period. This operationalization will call for new ways to measure agility as variations and related aggregates of observed performances of δM and δR (rather than perceptions of capabilities for performance). In addition, a theory of agility should separate clearly agility as a capacity and then build upon separate constructs to explain and detect what determines or creates such agility capacity over time. We also posit that a theory of the mechanisms that produce agility needs to be grounded on theories of the microfoundations of dynamic capabilities.

Overall, we surmise that a more coherent theory of agility is needed given the significance of the phenomenon to contemporary organizations. Despite significant advances in articulating related constructs such as strategic flexibility or decision speed over the last decades a consistent and clear definition has been lacking. This hampers theory development and slows down advances in operationalization and empirics as to truly understand the effects of agility on competition and firm performance. We hope this paper provides initial order to this fast shifting conceptual space and makes e initial steps towards a more encompassing theory of agility.

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TABLE 1
Agility Construct Literature Review Table

Reference and Study Type	Construct	Conceptualization		Dimensions	Propositions/Results
		Construct	Temporal View		
Pearce et al. (1986) *Conceptual*	Strategic Flexibility	Ability to reposition in a market, change game plan, or dismantle strategies when current customers lose attractiveness	Not explicitly given	None specified.	N/A
Judge & Miller (1991) *Empirical*	Decision Speed	Time to strategic decision making (based on Eisenhardt 1989)	"Decision Duration" (reverse of Decision Speed) measured as the estimated time gap between the first reference to deliberate action (e.g., meeting) and actual commitment to action	Unidimensional: Time	• The greater the number of alternatives that are simultaneously considered, the higher the decision speed. • The influence of decision speed on sales growth and profitability is significant (and positive) only in high velocity (bio-tech) environments
Evans (1991) *Conceptual*	Strategic Flexibility	Capability to refocus resources and recalibrate strategies when underlying assumptions of current strategies are made invalid by high frequency and unexpected changes in the environment. This includes capability to generate variety to respond to the unexpected and mutate into new forms to fit the contingency of the situation	Rapidly recalibrating strategies in order to increase the speed and scope of response to continual changes in the environment	Two temporal dimensions (i.e., ex ante and ex post) crossed with two intentional dimensions (i.e., defense and offence) result in 4 distinct dimensions of strategic flexibility: • *Defensive ex ante*: capability to endure or avoid the consequences of unexpected changes for the strategy to remain viable • *Defensive ex post:* capability to return to the previous state after an unexpected contingency • Offensive *ex ante*: capability to generate variety to respond to unexpected situations • *Offensive ex post:* capability to modify into an alternate form to accommodate unknown disturbances in the environment	N/A

Bahrami (1992) *Conceptual*	Agility	Ability to change rapidly to take advantage of emergent opportunities and/or side-step threats.	Not clearly specified. Generally refers to response speed between decision and action or changing course in response to unexpected but continual change.	Characterized by tensions between control versus autonomy, uniformity versus diversity and long term versus short term view.	N/A
Hayes & Pisano (1994) *Conceptual*	Strategic Flexibility	Ability to switch gears from rapid product development to low cost production relatively quickly and with minimal resources.	Not explicitly given.	Unidimensional: continuous exploitation of skills and capabilities that permit a firm to excel in turbulent competitive environments	• Strategic flexibility generates competitive advantage in turbulent environemtns
Sanchez (1995) *Conceptual*	Strategic Flexibility	Ability to respond *quickly* to changing technological and market opportunities by offering: 1) *more* new products, 2) *broader* product lines, and 3) *more rapid* product upgrades.	Increase in the speed of response by increasing variety.	Two dimensions: • *Resource flexibility:* Ability to identify and acquire flexible resources that increase alternative options for developing, producing, distributing and marketing products. • *Coordination flexibility:* ability to develop flexibility in coordinating different types of resources to exploit critical interdependencies among them for increasing variety.	Increased competitiveness and competitive advantage due to higher flexibility (including the speed at which the flexibilities can be used) in responding in dynamic markets
Sanchez & Mahoney (1996) *Conceptual*	Strategic Flexibility	Capability to respond more readily to changing markets and technologies by rapidly creating product variations (as per Sanchez 1995)	Rapid response, greater variety	None specified	Modularity in product and organization designs, along with loosely coupled systems, enable strategic flexibility of organizations.

Smith & Zeithaml (1996) *Empirical*	Strategic Flexibility	Capability built through exposure to uncertain environments during international expansion and integrated back into the organization by redeploying the org members in the domestic operations	Described as capability to respond to diverse market conditions, competitive and country conditions, technologies and other variables that formed an uncertain environment	Unidimensional	• Strategic flexibility can be created with chaotic condition in the beginning followed by top-management focusing • Path to organizational change and revitalization can be rigid or chaotic. The paths can be reconciled through strategic flexibility where the capabilities developed by organizational members operating in a chaotic environment are deployed within a planned and rigid organizational context
Volberda (1996) Conceptual	Strategic Flexibility	Capability to respond to unfamiliar changes in the environment with high variety and speed of response manifested as discontinuing current strategies and creating new norms, values and actions.	High speed and variety of response	Two dimensions: • *Internal Strategic Flexibility*: capability to adapt to the demands of the environment by discontinuing current and initiating new strategies • *External* Strategic *Flexibility:* capability to influence and become less vulnerable to changes in the environment by activities such as creating new products or deterring entry of competitors	In a hypercompetitive environment strategic flexibility forms and important part of the flexibility mix of the firm in addition to nonroutine technology, organic structure and innovative culture
Matusik & Hill (1998) *Conceptual*	Strategic Flexibility	The ability to quickly reconfigure internal structures and contractual obligations to meet market demands	The capability to respond more quickly to changes in market conditions (such as supply and demand) than competitors	Unidimensional: The use of contingent work to address environmental turbulence	Strategic flexibility reduces a firm's legal and contractual obligations to more quickly address shifts in market conditions

Adler et al. (1999) *Empirical*	Flexibility	Moving the efficiency/flexibility tradeoff to simultaneously pursue both. In operational terms, defined as the ability of a manufacturing plant to introduce new models	Reduced product cycle times and the time taken to ramp up production to targeted quality and efficiency levels after a major product model change is implemented	Four mechanisms to manage the efficiency- flexibility paradox: • *Metaroutines:* Changing non routine into routine • *Partitioning:* Different subunits that specialize in routine or nonroutine tasks • *Switching:* Allocating time to routine and nonroutine tasks • *Enrichment:* Adding nonroutine tasks or improvement goals to routine tasks or efficiency goals	• A greater number of metaroutines increase performance and efficiency • Continuous routine improvements, and the continuous construction and dismantling of partitions generates benefits in shifting between flexibility / efficiency • Contextual factors such as trust and training for effective implementation of the four basic mechanisms proved crucial for shifting the efficiency-flexibility tradeoff
Young-Ybarra & Wiersema (1999) *Empirical*	Strategic Flexibility	A construct with multiple dimensions (Evans 1991) with the ability to 1) adapt to environmental changes (Aaker and Macarenhas 1984), 2) change game plans (Harrigan 1985), 3) precipitate intentional changes, 4) continuously respond to unanticipated changes, and 5) adjust to the unexpected consequences of predictable changes (Bahrami 1992)	No specific discussion of speed or rate. Focuses rather on the fluidity of alliance arrangements in terms of modification of terms or ease of exit as antecedent to strategic flexibility	Examines antecedents to strategic flexibility in alliances through contract terms for modification and exit and the level of trust	Increased competitiveness acquired through strategic flexibility
Grewal & Tansuhaj (2001) *Empirical*	Strategic Flexibility	Capability to (1) respond promptly to opportunities, (2) manage the risks in the macro environment, and (3) respond effectively to variation in the environment.	”Superior” capability for responding to environmental uncertainties through resources and options that can be reconfigured with *speed*	Unidimensional including aspects of macro environment risks, resource liquidity, slack and versatility	• Strategic flexibility positively influences firm performance in times of crisis. • Influence of strategic flexibility is amplified in high competitive intensity environments and diminished in high demand uncertainty and high technological uncertainty environments
Raynor & Bower (2001) *Conceptual*	Strategic Flexibility	Being nimble and responsive to environmental changes through involvement of top management in dynamically balancing the short term need of division autonomy with long term requirement of cooperation.	Moving nimbly when opportunities arise. Strategic flexibility is most useful in uncertain markets further implying that strategic flexibility entails moving with speed.	Unidimensional.	N/A

Worren, Moore & Cardona (2002) *Empirical*	Strategic Flexibility	Capability to respond effectively to rapidly changing markets by increasing variety and rate of new product variations or introductions	Rate of increasing product variety	Three characteristics are considered: • Number of product variations offered • Frequency of new model introductions • Number of entirely new products	• Modular product architecture is associated with higher capability for strategic flexibility • Strategic flexibility is positively associated with firm performance
Sambamurthy, Bharadwaj & Grover (2003) *Conceptual*	Agility	Ability to explore and exploit opportunities for innovation and competitive performance by sensing opportunities, deploying requisite assets and knowledge, and leveraging a network of relationships with *speed and surprise.*	"speed and surprise" represented as "operational" agility in its dimensional structure (see next column).	Three dimensions specified: • Customer agility (involving customers in the exploration and exploitation of opportunities), • Partnering agility (build network of strategic, extended or virtual partnerships with suppliers, distributors, etc), • Operational agility (rapidly redesign business processes and create new processes to accomplish speed, accuracy and cost economy)	N/A
Joshi & Sharma (2004) *Empirical*	Strategic Flexibility	In the context of customer knowledge development process this entails learning from and being responsive to customer feedback achieved by fast diffusion of feedback information to different units and a well-coordinated response between the units to this feedback.	Given by fast information flow and smooth coordination between different units to address the customer feedback.	Described in terms of learning and response to the information provided by customer feedback	• Strategic flexibility fulfills one of the requirements of customer knowledge development process, and customer knowledge development is related to new product performance • Cross functional new product development teams facilitate learning and response required for strategic flexibility
Shimizu & Hitt (2004) *Conceptual*	Strategic Flexibility	Capability to (a) identify major changes in the external environment, (b) quickly commit resources to new courses of action, and (c) recognize and act promptly when it is time to halt or reverse resource commitments.	Recognize and response speed	Three capabilities needed to overcome barriers to strategic flexibility: • Pay attention to negative *feedback* • Collect and asses negative data objectively • Initiate and complete change in a timely fashion even in the face of uncertainty	Not explicitly discussed. Essential to organizational performance implied.

Belderbos & Zou (2007) *Empirical*	Flexibility	Flexibility is defined as prompt and smooth reallocation of resources in response to environmental changes. Focus of the paper on operational flexibility described as the changes in routine activities related to manufacturing, distribution and financial operations	Described as prompt changes in the definition of flexibility. The operationalization captures average annual growth rate of affiliate's employment in a given period of time.	Flexibility broadly categorized as strategic and operational flexibility but the focus of the paper is on operational flexibility given by degree to which MNE can adjust operations amongst its affiliates to effectively respond to the environmental changes in the focal country	• JV are less operationally flexible in the face of new market opportunities or cost changes as compared to wholly owned affiliates. This was found to be related to renegotiation cost, intense decision making and divergent interests of many partners and investors • In a multinational plant network affiliate growth is faster since MNEs shift their activities across countries to manage the increasing labor cost in some parts of the network. • Presence of JVs in multinational plant networks did not reduce operational flexibility across the network
Nadkarni & Narayanan (2007) *Empirical*	Strategic Flexibility	Capability to execute (a) larger diversity (variety) of strategic responses, and (b) rapid intentional changes from one strategy to another.	Variety and shift in firm response speed in terms of (a) resource deployment, and (b) competitive action.	Two conceptual dimensions (i.e., variety and shift) crossed with two substantive dimensions (i.e., resource deployment and competitive action) result in 4 distinct dimensions of strategic flexibility	• Strategic flexibility has a significant positive effect on firm performance in high velocity environments. • But a significant negative effect on firm performance in slow velocity environments. Complexity in strategic schema of top managers showed a positive relationship with strategic flexibility while centrality of the schema showed a negative relationship
Conboy (2009) *Conceptual*	Agility	"Continual readiness of an [organization] to rapidly or inherently create change, proactively or reactively embrace change and learn from change while *contributing* to perceived customer value, through its collective components and relationships with its environment" (p. 340)	Response speed and variety	• Flexibility: ability to create or embrace change in a timely manner • Leanness: customer value through economy, quality, and simplicity	N/A
Sarker & Sarker (2009) *Empirical*	Agility	Capability of a distributed team to speedily accomplish tasks and to adapt and reconfigure itself to changing conditions in a	Response speed. Also, ability to quickly shift between different response speeds (slow	Three dimensions: a) Resource agility, i.e., shifting personnel and technological resources quickly as needed; b) Process agility, i.e.,	N/A

		rapid manner.	versus fast) based on project objectives.	seamlessly working with differences due to methods, geographic/temporal differences, and changes in the environments; c) Linkage agility, i.e., leveraging intercultural and communicative competence to respond with speed.	
Sull (2009) *Conceptual*	Agility	The capacity to identify, capture, and exploit opportunities more quickly than rivals do	Specified in strategic agility as patience (reactive) and boldness (proactive) in spotting opportunities. Specified in operational agility as exploiting core business models more quickly than competitors. Specified in portfolio agility as versatility of human resources to adapt to new circumstances	• *Strategic:* Spotting and seizing game-changing opportunities through patience and boldness • *Operational:* Exploiting opportunities within a focused business model more quickly than rivals do • *Portfolio:* Capacity to shift resources–cash, talent, and attention– based on logic and data rather than emotion	N/A
Berk & Kase (2010) *Conceptual*	Strategic Flexibility	The ability to adapt when faced with uncertainty	Described loosely as the ability to more quickly grasp advantages related to new investments	Unidimensional: Strategic flexibility is composed of organizational capabilities that manage uncertainty proactively.	N/A
Doz & Kosonen (2010) *Conceptual*	Strategic Agility	Metacapabiliy to renew and transform business models in a timely manner.	Decision speed	• Strategic sensitivity defined as keen awareness and attention to strategic developments; • Leadership unity defined as the top management ability to make bold and fast decisions without getting bogged down • Resource fluidity defined as capability to reconfigure capabilities and redeploy resources rapidly in a new transformed system.	N/A

Zhou & Wu (2010) *Empirical*	Strategic Flexibility	Firm's dynamic capability to reallocate and reconfigure resources, processes, strategies, and functions in response to environmental changes	"Flexibility" in resource and coordination activities but flexibility itself not specified. No explicit definition of temporal ordering.	Unidimensional: Specified as flexibility in allocation and coordination of resources	• Strategic flexibility does not significantly influence either exploration and exploitation • Strategic flexibility enhances the positive effects of technological capability on exploration, but this effect diminishes with increasing levels of technological capability
Tallon & Pinsonneault (2011) *Empirical*	Agility	Ability to detect and respond to opportunities and threats in the environment with ease, speed, and dexterity	Response speed (time to react) in making changes to strategy in three areas (see dimensions).	Three dimensions per Sambamurthy et al. (2003): • Customer responsiveness • Business partnerships • Operations	• Agility has a positive and significant influence on firm performance (ROA, net margin, and operating income/assets) • Agility has a stronger influence on firm performance in volatile relative to stable environments.

FIGURE 1

A Two-dimensional Framework for Conceptualizing Organizational Agility