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Innovation management  
and strategy

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# Innovation Management

Winter School “Innovation and Sustainability”

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## Strategy

Formulating a company's technological innovation strategy requires the firm to assess its **current position**

(e.g., strengths, weaknesses, core competencies, sources of sustainable competitive advantage)

and define its **strategic direction**

(e.g., how should the value proposition evolve overtime, resource needs)

A company's strategic intent should be **ambitious**

(i.e., create a gap between existing resources and capabilities and those needed to achieve its intent)

**Strategic intent** development begins with an evaluation of the firm's **capabilities** and ideally ends in a **plan** that cohesively leverages all the firm's resources to create a **sustainable competitive advantage**

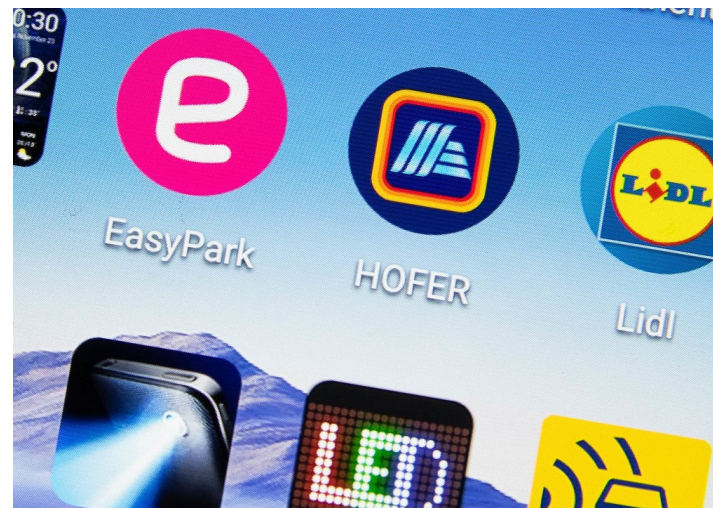


**Degree of rivalry** in an industry is a function of:

- how many firms there are and their relative size  
(many firms of equal size leads to greater rivalry but so can a few large competitors that engage in price wars)
- how different each firm (or its product) is from the others  
(e.g., the lack of significant differences between a firm and its competitors may lead to a vigorous price competition)
- product demand
- height of exit barriers



**Threat of potential entrants** is high when the industry is attractive, and entry barriers are low



wuestenigel  
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It is important to evaluate whether the industry is attractive before turning to barriers; if the industry is unattractive, barriers become unimportant



**Bargaining power of suppliers** is a function of the number of suppliers, product differentiation, amount purchased, switching costs and the ability of buyers and suppliers to vertically integrate

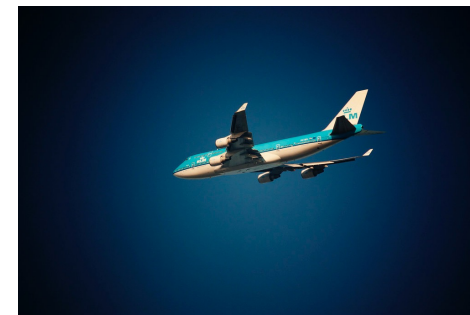
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**Bargaining power of buyers** is also a function of the number of buyers, level of product differentiation, amount purchased, switching costs and whether the buyer or supplier can effectively threaten to vertically integrate



**Threat of substitutes** is a function of the number of potential substitutes, their closeness in functionality, and their relative price. A substitute is not the same as a competitor



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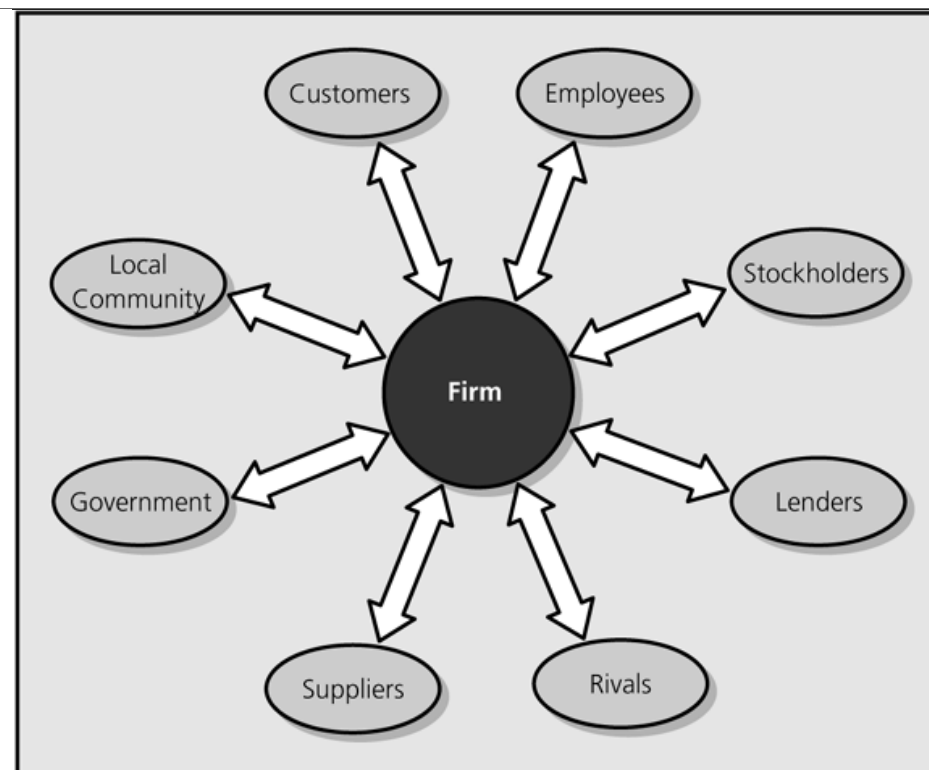


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## Stakeholder analysis

Stakeholder analysis begins with the identification of all parties impacted by the firm, what their interests (and claims) are and what resources they contribute to the firm

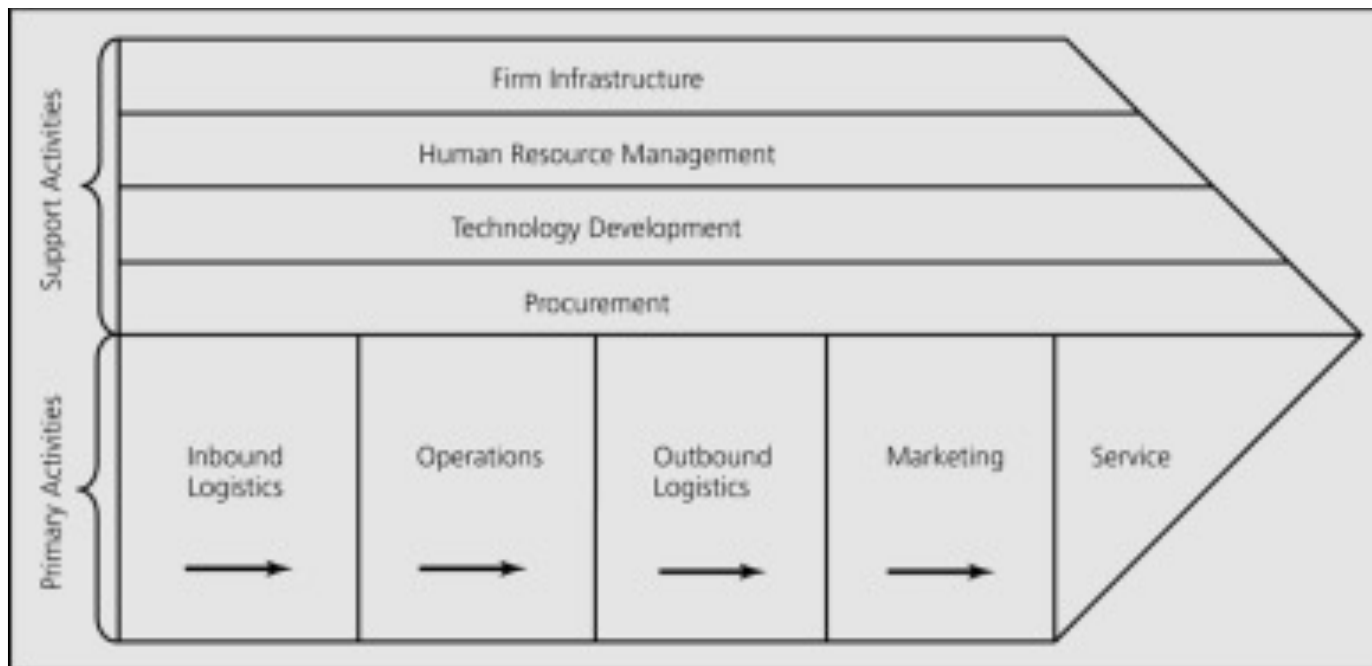




## Internal analyses

Internal analyses begin with an assessment of a firm's **strengths** and **weaknesses** in each part of the company's value chain

Schilling 2022





## Internal analyses

The firm then identifies which strengths have the potential to be a source of **sustainable competitive advantage** (i.e., are rare, valuable, durable, and inimitable)

Some resources are not easily imitable:

**Tacit** (e.g., talent)

**Path dependent** (e.g., first mover advantages)

**Socially complex resources** (e.g., a particularly effective group)

**Causally ambiguous** (e.g., talent)



## Identifying Core Competencies and Capabilities

**Core competencies** differentiate a company strategically from its competitors and are usually a **combination of different kinds of abilities** (e.g., advertising, distribution, information systems, logistics management, applied science, process design)

It is the harmonious combination of abilities that makes core competencies difficult to imitate

**Sony's core competency** in miniaturization is the result of the firm's ability to harmonize the use of multiple technologies including liquid crystal displays, semiconductors, etc.

Sony is then able to utilize this competency in multiple markets including televisions, radios, personal digital assistants, etc.



## Identifying Core Competencies and Capabilities

**Is the competency a significant source of competitive differentiation? Does it provide a unique signature to the organization? Does it make a significant contribution to the value a customer perceives in the product?**

For example, **Sony's** skills in miniaturization have an immediate impact on the utility customers reap from its portable products.

**Does the competency transcend a single business? Does it cover a range of businesses, both current and new?**

For example, **Honda's** core competence in engines enables the company to be successful in businesses as diverse as automobiles, motorcycles, lawn mowers, and generators



# Identifying Core Competencies and Capabilities

**Is the competency hard for competitors to imitate?**

In general, competencies that arise from the **complex harmonization** of multiple technologies will be difficult to imitate because these competencies usually take years to build and are path dependent

The **Risk of Core Rigidities** is faced by firms when they focus on current capabilities and do not develop new ones

Sometimes the very things that a firm excels at can enslave it, making the firm rigid and overly committed to inappropriate skills and resources

**Six-Sigma vs. Research Capabilities**



## Identifying Core Competencies and Capabilities

**Dynamic Capabilities** enable a firm to quickly reconfigure its organizational structure and routines in response to new opportunities and are not related to specific products or technologies

**Corning** is a company that invested heavily in its dynamic capabilities by heavily investing in research in areas likely to provide scientific breakthroughs, building pilot plants and managing its relations with other firms as an integrative and flexible system of capabilities that extended the boundaries of the firm



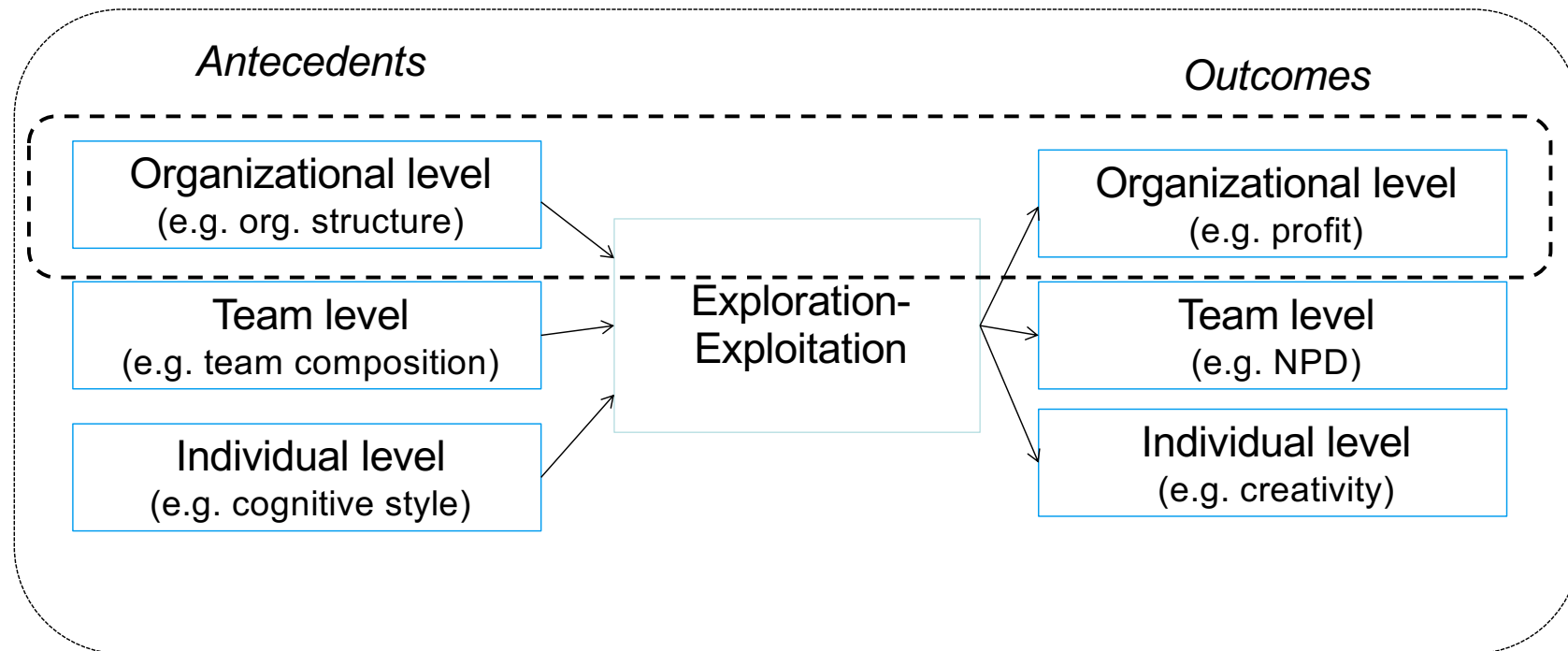
## Strategic Intent

A **firm's strategic intent** is an ambitious long-term goal (i.e., 10 to 20 years in the future) that requires all levels of the organization to build on and stretch the firm's existing core competencies

A firm's strategic intent takes the focus away from current markets and meeting current customer requirements so that the organization can focus on future markets and customer requirements

**Canon's** obsession with overtaking Xerox in copiers, **Apple's** mission of ensuring that every individual has a personal computer, and **Yahoo's** goal of becoming the world's largest internet shopping mall are all examples of strategic intent

# Exploration-Exploitation in organizations



# Exploration & Exploitation (organizational level)

Two core innovation processes (March, 1991)

- Exploitation: refinement, efficiency
- Exploration: discovery, experimentation

Require fundamentally different underlying knowledge search processes:

- Exploitation—*search depth*: "how deeply a firm reuses its existing knowledge"
- Exploration—*search scope* "how widely a firm explores new knowledge" (Katila & Ahuja, 2002: 1183)

# Exploration & Exploitation (organizational level)

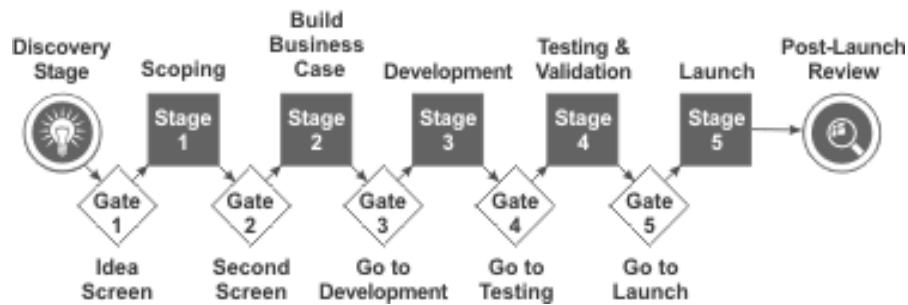
Organizing such search processes requires opposite focus and contradictory demands, at multiple levels (individual, team, project, organizational structure, etc.)

Yet, simultaneous pursuit of exploration and exploitation is required to avoid success and failure traps (e.g. Gupta et al., 2006)

# Challenges in Organizing Explorative Innovation at the process level

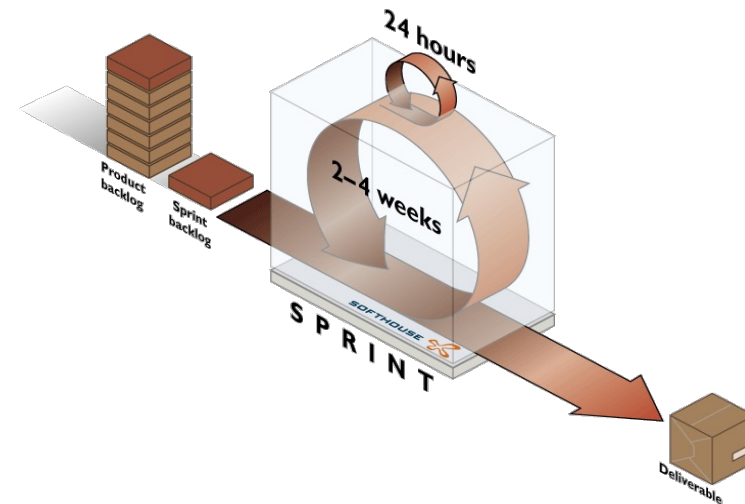
**Exploitative innovation:  
Structured process model**

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**Explorative innovation:  
Flexible process model**

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# Challenges in Organizing Explorative Innovation at the organizational level

## **Exploitative innovation: Mechanistic structure**

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- Centralized structure with multiple hierarchical levels
- Formal coordination by means of vertical communication
- Focus on control

## **Explorative innovation: Organic structure**

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- Decentralized structure with limited number of hierarchical levels
- Informal coordination by means of lateral communication
- Focus on autonomy

# A paradox lens

- > Paradoxes are ubiquitous and key to strategy (flexibility- change, short/long-term, cooperation-competition, exploration-exploitation, etc.)
- > Four paradox management strategies

	Opposition (acceptance)	Synthesis	<i>Integration</i>
	Spatial separation	Temporal separation	<i>Separation</i>

(Poole & Van den Ven, 1989; Schad et al., 2016)

# A paradox lens

Ambidexterity literature:

- > Exploration-exploitation as a paradox
- > Organizational ambidexterity: ability to deal with such paradox and resultant tensions
- > Research outlook: Andriopoulos & Lewis (2009)

# A paradox lens

How can organizations attain ambidexterity?

- > Shift *organizational focus* from exploitation to exploration (vice versa) over time.
- > Set up *organizational design* with dedicated units responsible for *either* exploitation *or* exploration.
- > Create *organizational context* that enables organizational actors to situationally oscillate between exploitation and exploration.

Exploration-exploitation tensions are resolved:

- > *Temporally* (over time)
  - Sequential ambidexterity
- > *Structurally* (across units)
  - Structural ambidexterity
- > *Contextually* (embedded in d)
  - Contextual ambidexterity

# A paradox lens

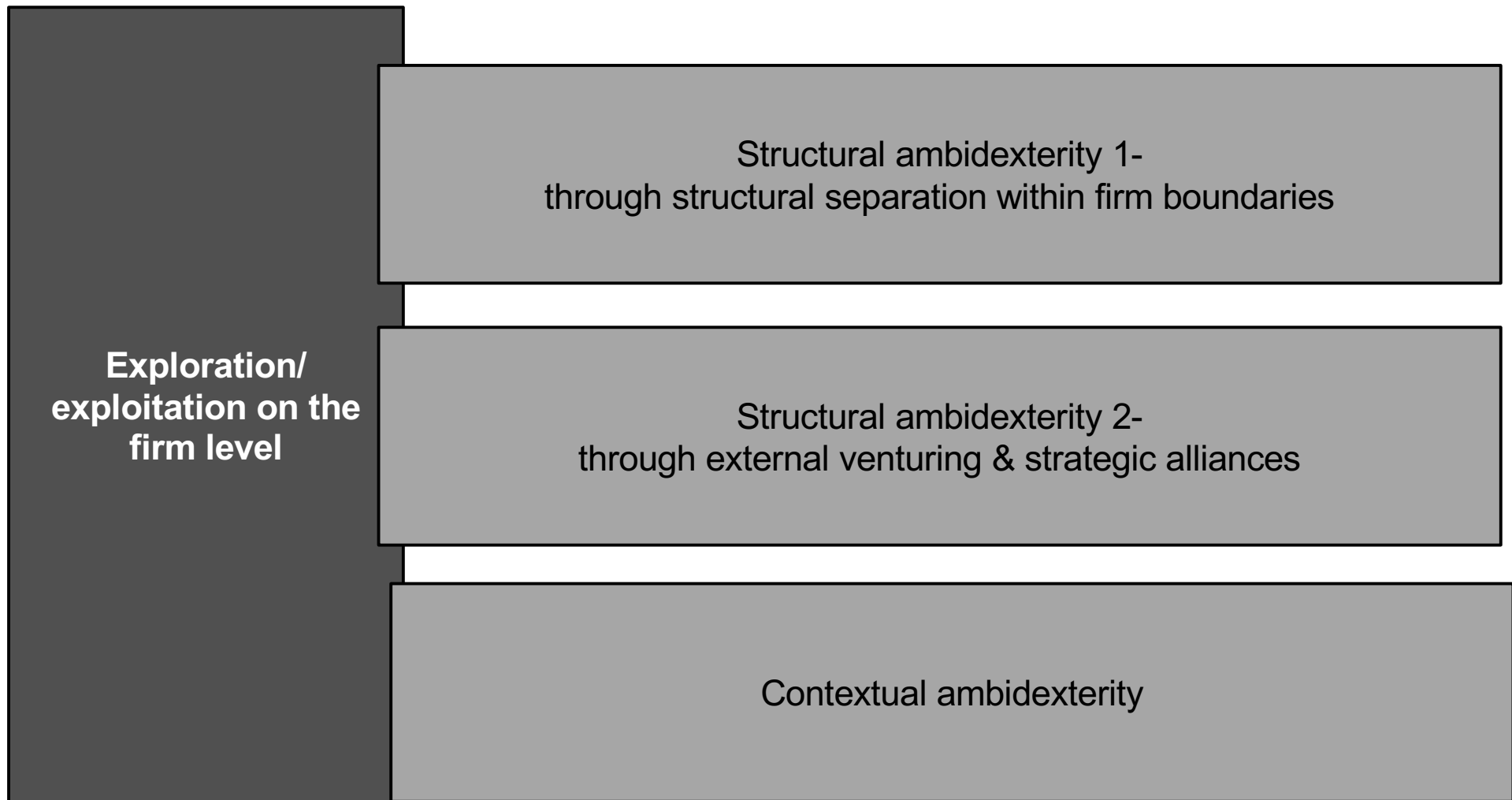
> Four paradox management strategies

	Opposition (acceptance)	Synthesis	<i>Contextual ambidexterity</i>
	Spatial separation	Temporal separation	<i>Structural &amp; sequential ambidexterity</i>

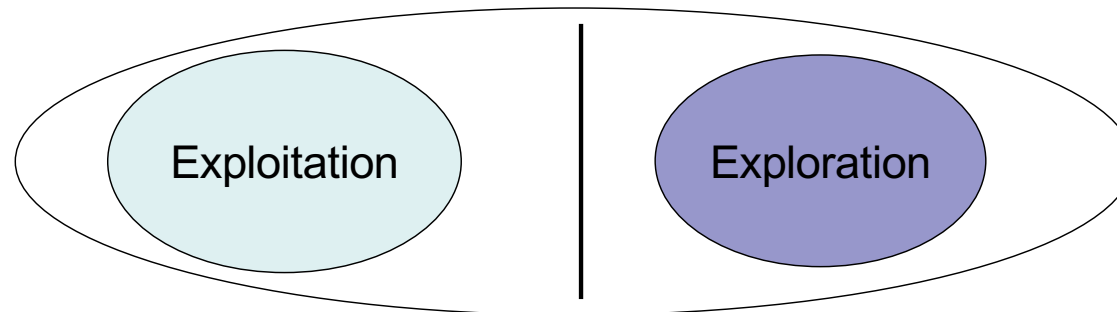
(Poole & Van den Ven, 1989; Schad et al., 2016)

(e.g. O'Reilly III & Tushman, 2013; Martin et al., 2019)

# Ambidexterity: Potential organizational answers



# Ambidexterity through structural separation – 1

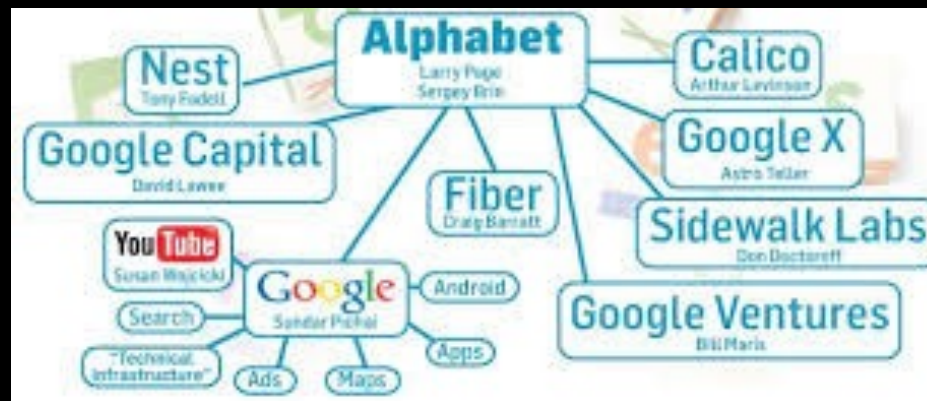


## Advantages

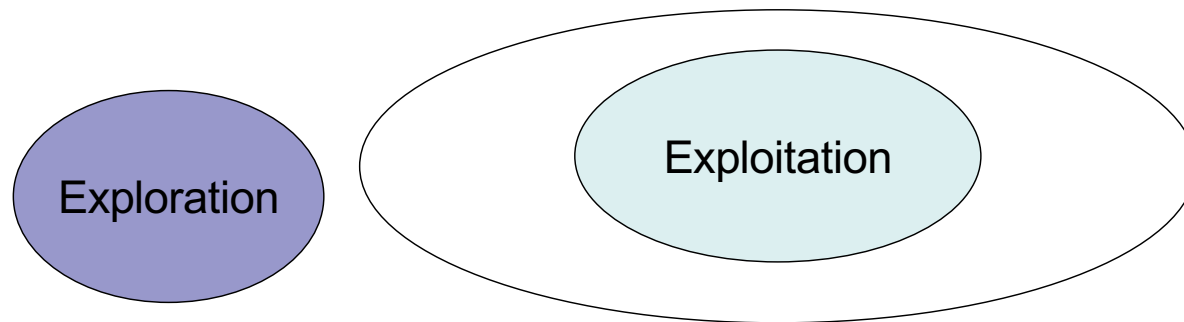
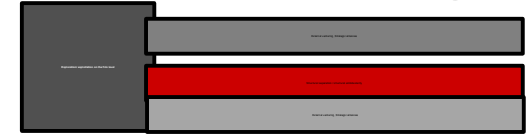
- Each separate unit can be optimally staffed, managed and structured

## Disadvantages

- Expensive and limited ability to realize synergies across different units



# Ambidexterity through strategic alliances and external venturing-2



## Advantages

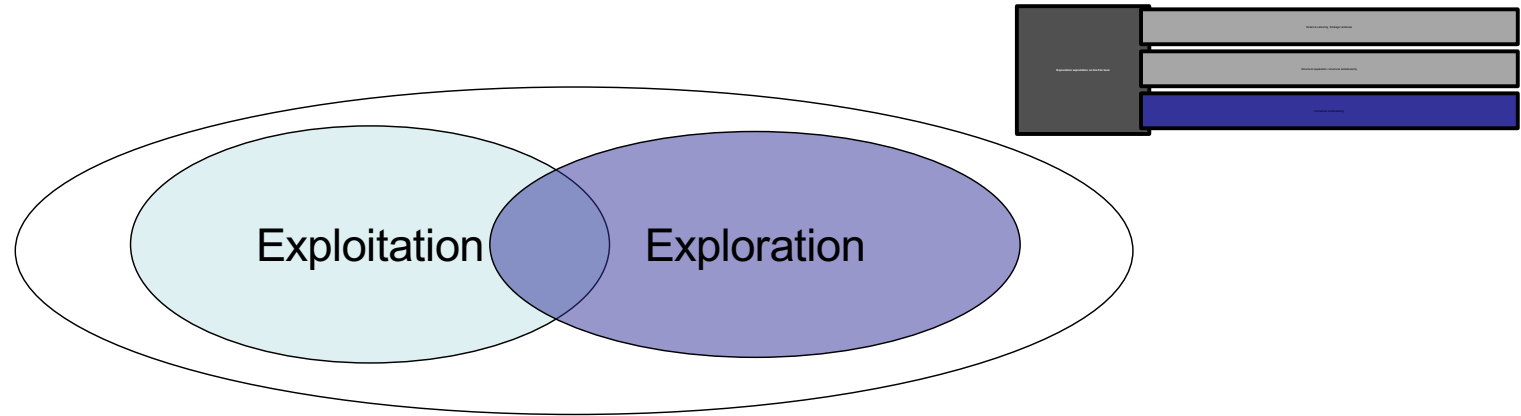
- Core of the company can focus on exploitation, whereas explorative activities are nurtured outside the firm

## Disadvantages

- Limited control and difficulties to integrate explorative activities when successful



# Ambidexterity through combination (Contextual ambidexterity: e.g., 20% innovation time-off)



## Advantages

- Bottom-up approach

## Disadvantages

- Demanding for individuals who continuously need to switch between exploration and exploitation; need for organizational systems and cultures that support contextual ambidexterity; cost-effectiveness questioned

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# The idea of balance in ambidexterity research

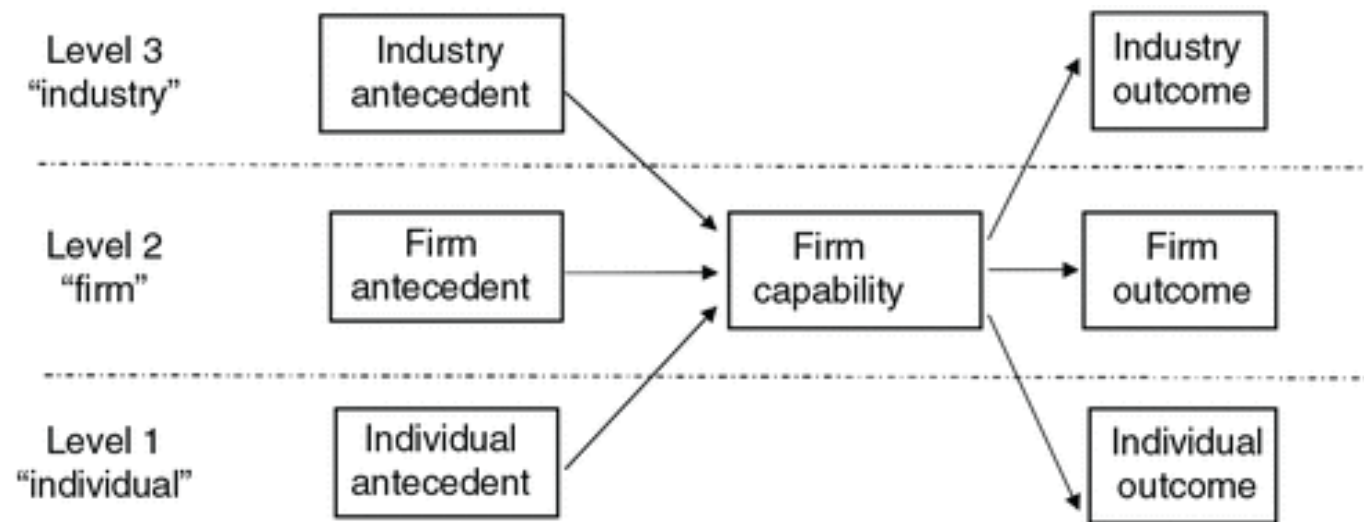
Research outlook: Lavie & Rosenkopf (2006)

- > Firms attain ambidexterity structurally through their alliance formation decisions
- > Sequential or Structural? Balanced
- > How to achieve balance? Over time & across domains

(see also Stettner & Lavie (2014): balance within vs. across modes, i.e. internal organization, alliances & acquisitions)

**TABLE 1**  
**Domains of Exploration-Exploitation**

Domain	Function	Structure	Attribute
Answers the question	What value chain function does the alliance serve?	Whom does the firm partner with?	To what extent does the partner differ from prior partners?
Focus	Alliance type	Network structure	Partner profile
Exploration (March, 1991) (search, variation, risk taking, experimentation, play, flexibility, discovery, innovation)	Forming a knowledge-generating R&D alliance	Forming an alliance with a new partner that has no prior ties to the firm	Forming an alliance with a partner whose organizational attributes differ from those of prior partners
Exploitation (March, 1991) (refinement, choice, production, efficiency, selection, implementation, execution)	Forming a knowledge-leveraging marketing/production alliance	Forming recurrent alliances with a partner that has prior ties to the firm	Forming an alliance with a partner whose organizational attributes are similar to those of prior partners
Content of learned knowledge	Value chain knowledge such as new technologies or market information and expertise in existing technologies	Remote knowledge and information on partners' identities and accessibility or immediate knowledge and in-depth familiarity with specific partners	Exposure to organizational diversity or specialization in a specific set of partner attribute configurations
Relevant references	Koza & Lewin (1998); Rothaermel (2001); Rothaermel & Deeds (2004)	Baum, Rowley, Shipilov, & Chuang (2005); Beckman, Haunschild & Phillips (2004); Verspagen & Duysters (2004)	Gulati, Lavie, & Singh (2003); McGrath (2001); Darr & Kurtzberg (2000)



- Figure 1. Multilevel antecedents & outcomes of a firm capability

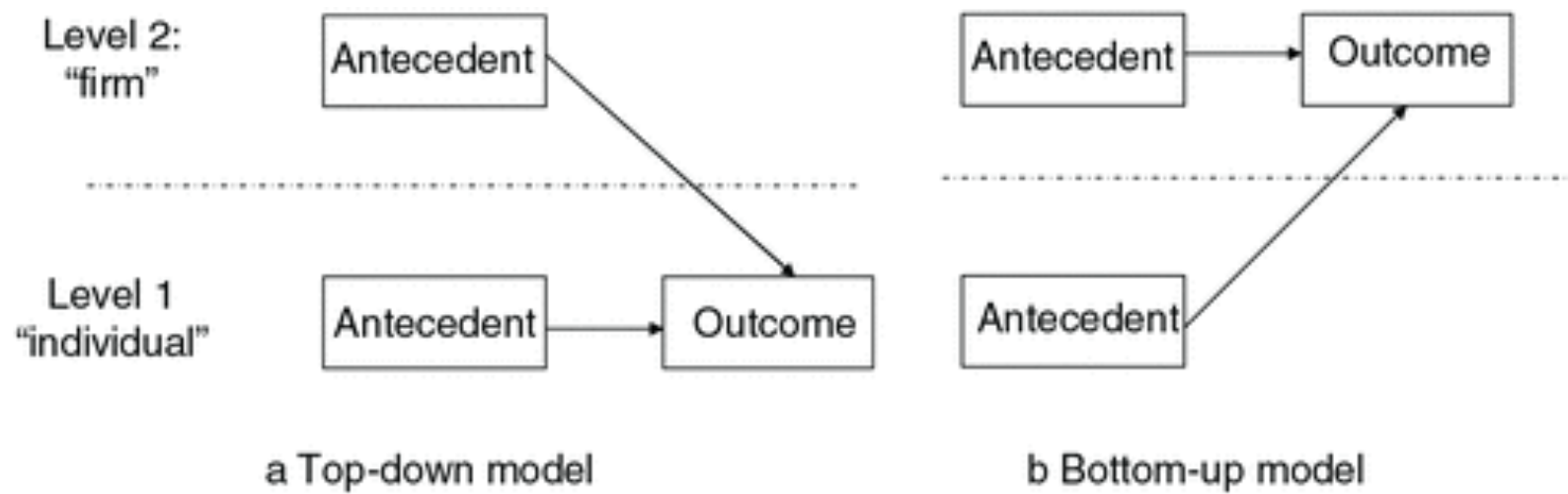
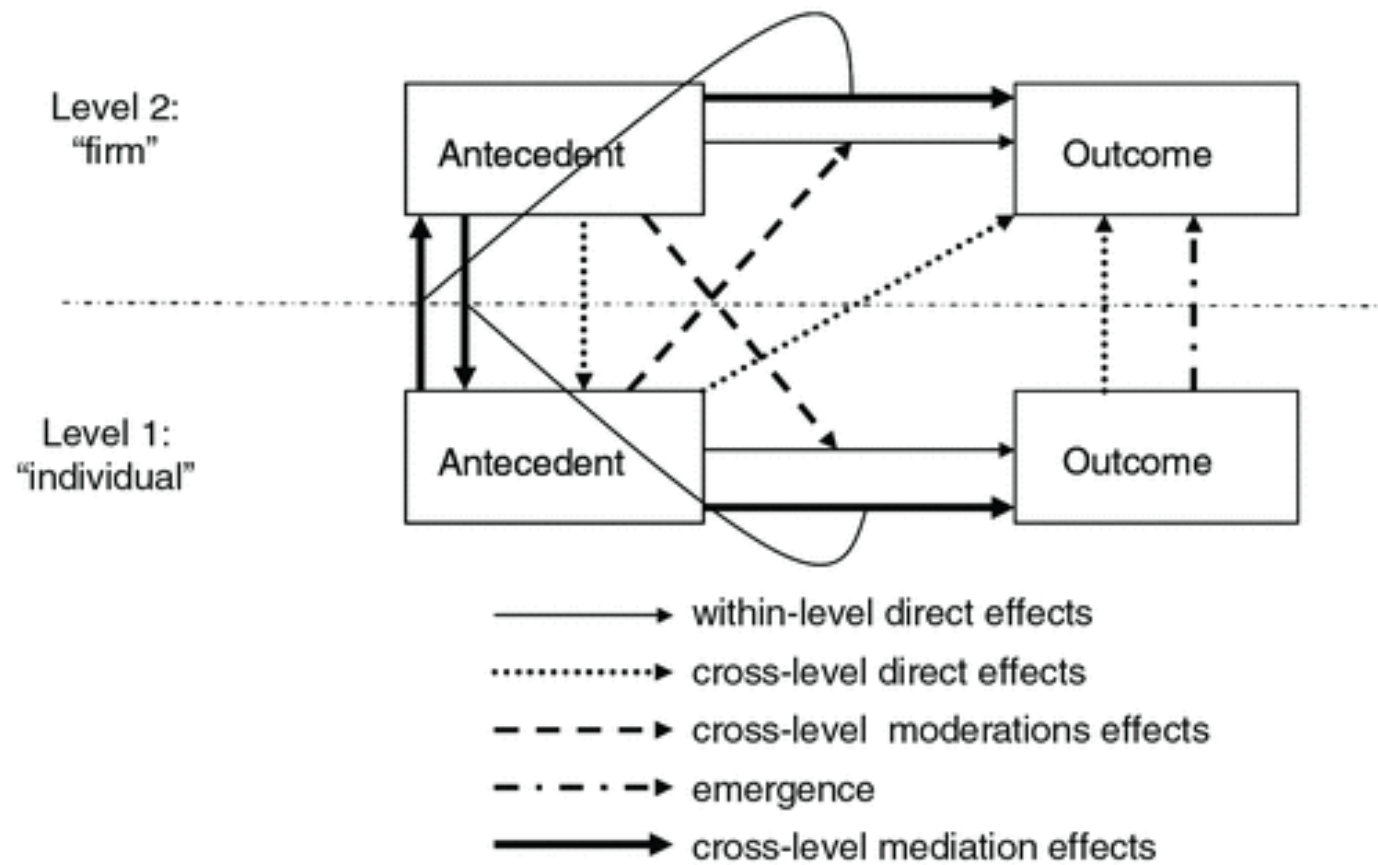
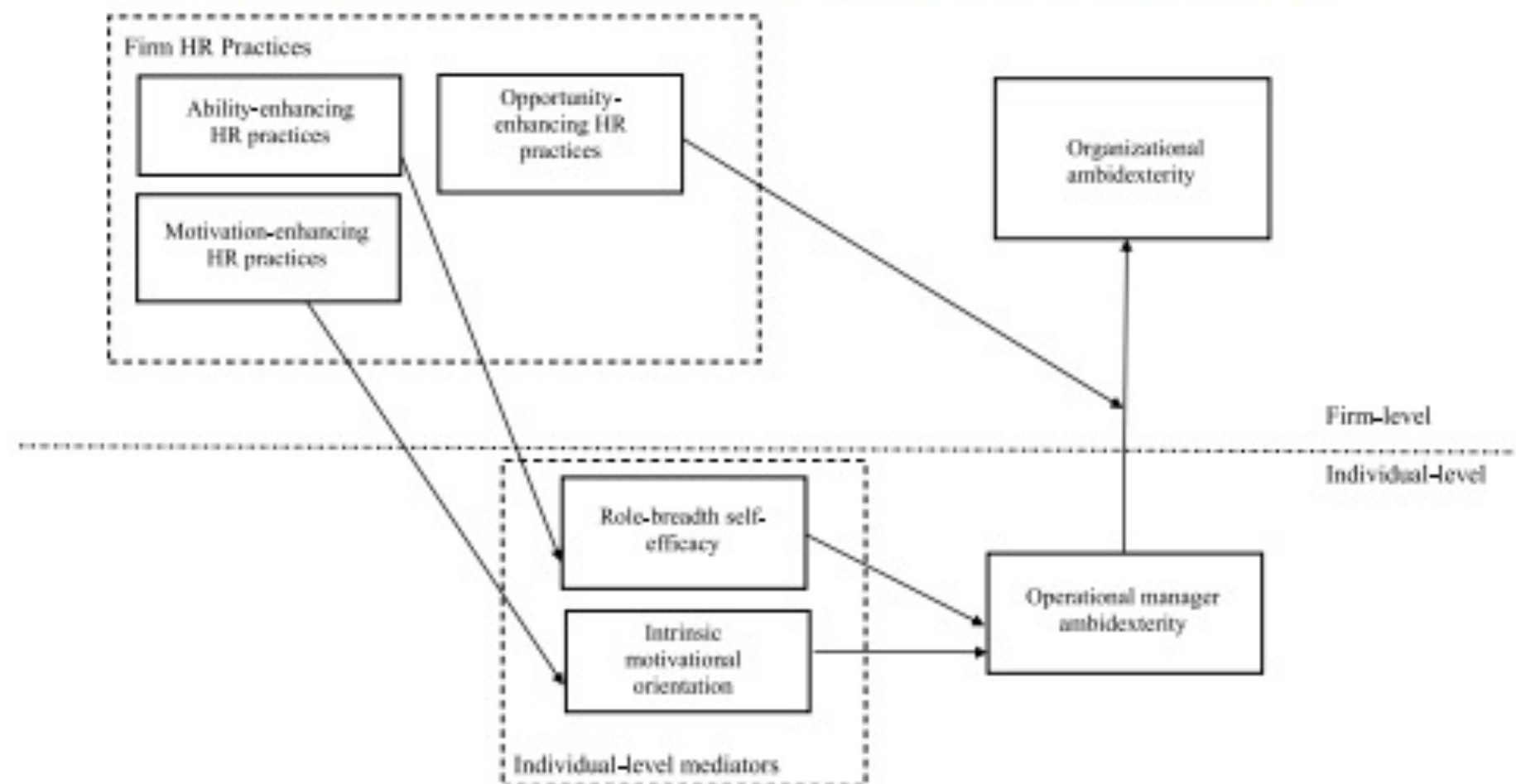


Figure 2. Multi-level top-down and bottom-up models



• Figure 3. Multilevel effects

## A Multilevel Integrated Framework of Firm Human Resource (HR) Practices, Manager Ambidexterity, and Organizational Ambidexterity





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