

# Artificial intelligence and strategic decision-making

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August 7, 2024  
Utah Strategy Summit

# Goal of this paper

- To explore the possible effects of AI on SDM
- Unusual paper:
  - About a phenomenon that doesn't exist yet
  - ? We need to create the artifacts we then examine (vignettes, experiments)
- Thanks to my co-authors in this space
  - This paper (R&R in StratSci): Harsh Ketkar, Hyunjin Kim
  - Earlier paper (in AoM Annals): Tom Steinberger

Artificial Intelligence and Strategic Decision-Making:  
Evidence from Entrepreneurs and Investors\*

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\* Academy of Management Annals  
2022, Vol. 16, No. 1, 1-37.  
<https://doi.org/10.5465/annals.2020.0192>

**ORGANIZATIONS AS ARTIFICIAL INTELLIGENCES:  
THE USE OF ARTIFICIAL INTELLIGENCE ANALOGIES  
IN ORGANIZATION THEORY**

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A rarely acknowledged fact about organization theory (OT) is that many of its ideas stem from the field of artificial intelligence (AI). For example, key OT concepts such as problemistic search, heuristics, exploration, requisite variety, and organizational scripts all have their roots in AI. The main goal of this paper is to expose the full range of AI ideas that have been used in OT. We do so by explaining key AI ideas and showing how OT used them. Our review covers over 100 OT works that depend on AI ideas both critically and explicitly. We group these ideas into 10 AI approaches that speak to three fundamental processes in organizations: search, representation, and aggregation. We argue that this broad and deep borrowing from AI stems from fundamental structural similarities between AI and OT, as both fields study how artificial systems (programs and organizations) can pursue intelligent behavior. We also identify areas of AI from which OT scholars may continue to draw inspiration and suggest ways in which AI technologies may continue to affect organizations. Overall, our work shows that, beyond its effect as a technology, AI has given OT a set of models about how organizations work.

# Agenda

Introduction

1. How it may look like

2. Effectiveness

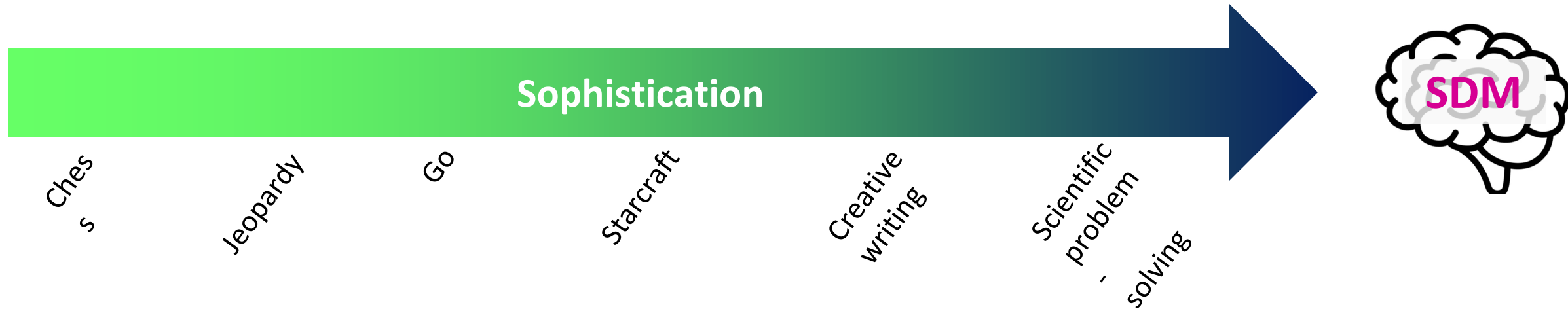
3. Implications

Future directions

# SDM has been a human-only domain

- Why? ☐ Difficult task (Leiblein, Reuer, Zenger 2018)
- Strategic decisions are:
  - High-stakes
  - Novel
  - Complex
  - Ambiguous
  - Subject to noisy feedback and long delays
  - “Wicked problems” (Churchman 1967)

# Advances in AI make AI-augmented SDM more plausible



- SDM is a type of decision-making  $\Rightarrow$  AI likely to impact it
- Large Language Models (LLMs) have accelerated this timeline
  - Can handle strategy-related data (text inputs/outputs)
  - Excel in complex domains (law, medicine, psychology) (Bubeck et al. 2023, Katz et al. 2023)
  - Contain valuable SDM information (consumer, business, and strategy knowledge) (Horton 2023)
- It is surprising
  - LLMs are designed to be next-word predictors
  - But they have “emergent behavior” (Wei et al. 2022)

# Key questions

1. How may AI-augmented SDM look?
1. How effective are current AI models at making strategic decisions?
1. What are the implications of using AI in SDM?

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# Re-imagining SDM tools

- SDM ideas have been embodied in tools

	Generation	Evaluation
Frameworks		
Scenario planning		
Dialectical methods (Devil's advocate & Delphi method)		
Wisdom of the crowd		



# 1. Five forces example

**Q:** Conduct a Porter's Five Forces analysis for the business school education industry

**A:**

- 1. Threat of New Entrants (Low to Moderate):** The business school education industry has a high barrier to entry. New entrants face significant challenges in terms of establishing a reputable brand, hiring qualified faculty, and securing necessary accreditations. Existing institutions often benefit from economies of scale and established networks, making it difficult for newcomers to gain a foothold. However, online education platforms and alternative education models, such as bootcamps, represent potential disruptive threats that lower barriers and intensify competition.
- 2. Bargaining Power of Suppliers (Moderate to High):** In this industry, suppliers primarily refer to faculty members and educational content providers. The bargaining power of suppliers is relatively high, especially for renowned professors and industry experts who can demand competitive compensation packages. Additionally, publishers of textbooks and educational materials hold some power, although digital resources are reducing their influence. The industry's ability to attract and retain top-tier faculty is crucial for maintaining competitiveness.
- 3. Bargaining Power of Buyers (Students) (Moderate to High):** The bargaining power of students has increased in recent years due to a growing number of education options. Students have access to a wide range of business schools, both traditional and online, which gives them more choices and price sensitivity. Therefore, institutions must focus on providing value through quality education, innovative programs, and career opportunities to attract and retain students.
- 4. Threat of Substitutes (Moderate):** Substitutes in the business school education industry come from various sources, including online courses, vocational training programs, and self-learning resources. With the advancement of technology, online education platforms have gained prominence, offering flexibility and cost-effectiveness. Business schools must continuously innovate and adapt their curriculum and delivery methods to differentiate themselves and mitigate the threat of substitutes.
- 5. Competitive Rivalry (High):** Competitive rivalry in the business school education industry is intense. Established players vie for top faculty, research funding, and the best students. Rankings and accreditation add to the competitiveness, as institutions strive to maintain or improve their positions. Differentiation through program specialization, international partnerships, and alumni networks plays a critical role in staying competitive. Moreover, the industry is witnessing an increase in international competition, as institutions from different regions seek to attract a global student body.

## 2. Scenario planning example

**Q:** In one sentence, describe three events that could make business schools obsolete or dramatically decrease their demand.

**A:**

1. The emergence of advanced AI technologies and platforms allowing personalized and interactive educational experiences that surpass the traditional business school model.
2. A significant shift in employer preferences towards practical skills and hands-on experience rather than formal education, rendering business school degrees less valuable.
3. The widespread adoption of alternative credentials and micro-credentials, such as industry-specific certifications and online courses, offering more accessible and flexible learning options for career advancement.

## 2. Scenario planning example (cont'd)

**Q:** Devise a plan so that the business school can still thrive under scenario 1.

**A:**

To ensure the business school thrives under the emergence of advanced AI technologies, the plan should focus on integrating AI into the curriculum and leveraging it to enhance student learning and engagement by:

1. Collaborating with AI experts and industry professionals to develop cutting-edge AI-driven educational platforms that provide personalized and interactive learning experiences.
2. Upskilling faculty members to effectively incorporate AI tools and technologies into their teaching methods, ensuring students receive valuable insights and practical application of AI in the business world.
3. Evolving the curriculum to include specialized courses focusing on AI, machine learning, and data analytics, providing students with the necessary skills and knowledge to leverage these technologies in their future careers.
4. Establishing partnerships with AI-driven companies and organizations to provide students with internships and real-world projects, allowing them to apply their AI knowledge in practical settings.
5. Conducting research and fostering collaboration to stay at the forefront of AI advancements, ensuring the business school remains a thought leader in the field and attracts top talent and industry partnerships.
6. Continuing to emphasize the development of critical thinking, problem-solving, and interpersonal skills, as these human abilities remain valuable even in an AI-driven business landscape.

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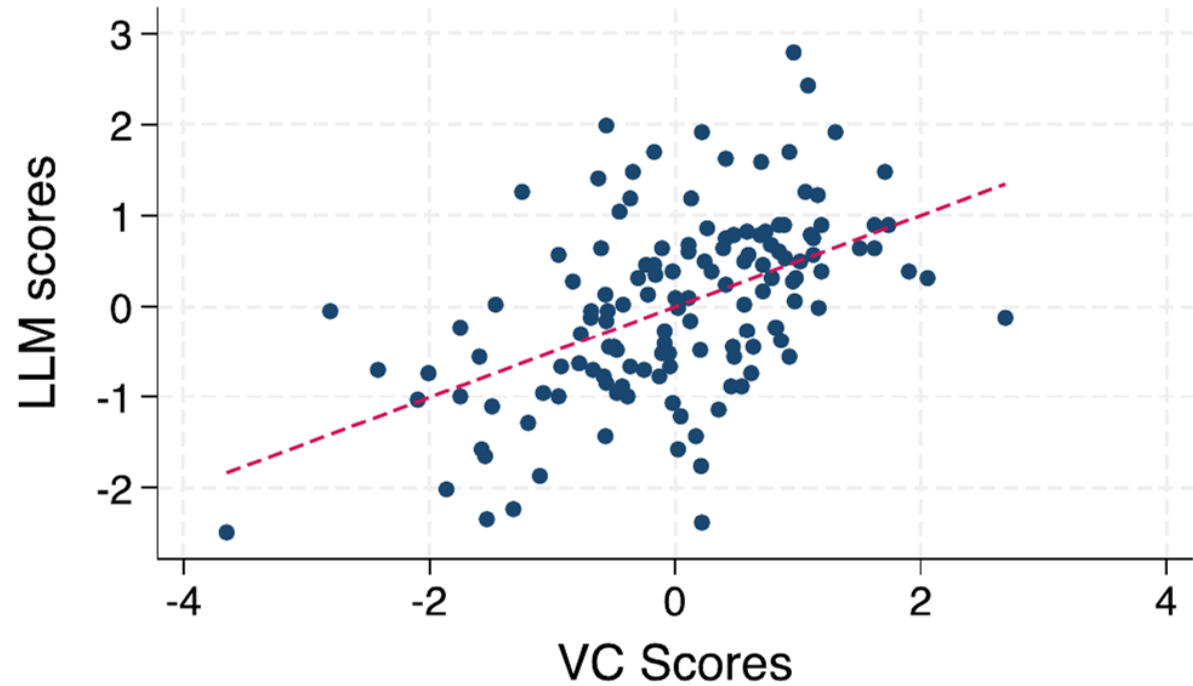
# (1) AI and strategy generation

- Using b-plans received by a leading startup accelerator:
  - Randomly selected 24 (12 accepted, 12 rejected)
- Asked GPT to create “AI twins”
  - Fill out a b-plan given the “problem description” (section 1 out of 5) of the real b-plan
- Asked 250 evaluators with experience in startup investing to evaluate 10 randomly assigned b-plans (real and AI)

	(1) Evaluation Index	(2) Acceptance	(3) Interest in Introduction	(4) Investment Likelihood
LLM	0.14*** (0.03)	0.05*** (0.02)	0.03* (0.02)	2.55*** (0.94)
Plan FE	Yes	Yes	Yes	Yes
Investor FE	Yes	Yes	Yes	Yes
Observations	2500	2500	2500	2500
Mean (entrepreneur)	-0.07	0.57	0.51	46.69
SD (entrepreneur)	1.04	0.50	0.50	30.41

## (2) AI and strategy evaluation

- Using 138 b-plans from a startup competition
  - Asked GPT to evaluate them using the same rubric as the human judges
  - The human judges we VCs



Correlation coefficient: 0.52

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# Summary of the findings

- LLMs may be used to automate SDM tools such as:
  - Frameworks
  - Scenario planning
- In our empirical analyses, LLMs exhibit the ability to **generate** and **evaluate** strategic ideas at a level that is comparable to the human-level
- It is plausible to think that AIs will be used to make strategic decisions
  - What would be the implications of this?
- Probably many, as
  - AI affects the central assumption of SDM: bounded rationality
  - This affects all cognitive processes of organizations: search, representation, aggregation (Csaszar & Steinberger 2022)



# Some implications on SDM processes



## Search

- Speed: AI accelerates alternative generation and evaluation
- Fitness and heterogeneity: Vary with AI capabilities (weak vs. strong)



## Representation

- Increased representational complexity (Csaszar and Ostler 2020)
- Enhanced ability to change representations (Gavetti & Menon 2016)



## Aggregation

- Virtual crowds (“silicon sampling”) (Argyle et al. 2023)
- Role-playing and decision-making simulations (Malerba et al. 2016)

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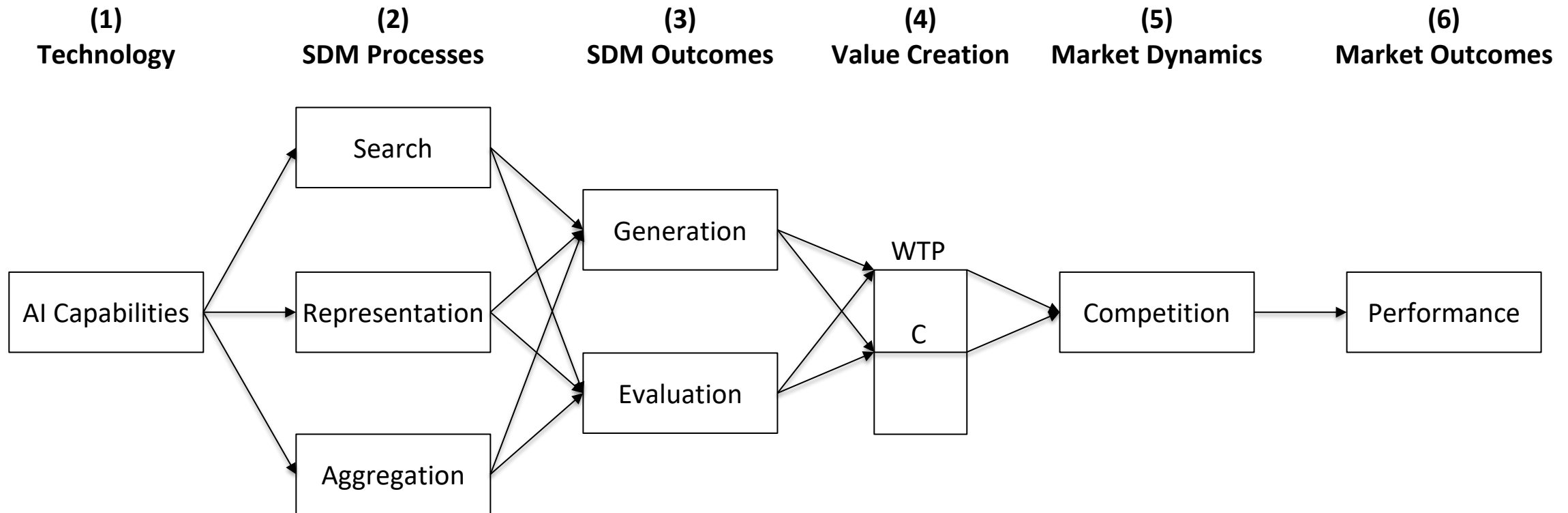
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# Connecting AI to firm performance



AI Capability	Main Effect	Competition
Weak	More homogenous	Commoditized
Progressing	Firms differ in their capability to adopt & innovate	Schumpeterian
Strong	SDM is commoditized? source of comp. adv. is complementary assets	Ricardian

# Open questions on the limits of AI-augmented SDM

TBV-inspired questions (Felin and Zenger 2009, Camuffo et al. 2020):

- **Theory building:**  
AI's potential for novel vs. replicated ideas
- **Theory testing:**  
AI simulations vs. real-world experiments
- **Theory updating:**  
AI's role in overcoming biases vs. potential homogenization

# Conclusion

- **1. How may it look like?**

- Plausible that AI will be used in SDM
- The current iteration of AI, LLMs, can already be used in multiple ways in the SDM process

- **2. How well does it perform?**

- It achieves human-comparable performance in realistic generation & selection strategy tasks

- **3. What would be some implications?**

- The inclusion of AI in SDM may be the most important change in the history of SDM
- It implies vast changes in how firms
  - pursue intelligent action (effects on search, representation, and aggregation)
  - the value they create, and
  - the performance they achieve

- We live in interesting times
  - AI will continue to advance
  - Integrating AI into strategy opens up exciting opportunities for strategy research and practice