final version is [here](#) as it supports video

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1. Introduction

As a first-year Ph.D. student in the field of Management, I have observed that the research production strategy is not adequately customized to the unique needs and challenges faced by early-stage scholars. This issue is particularly pressing given the ever-expanding methodologies and applications in management research, which can overwhelm students who are not trained to strategically manage their capacity in terms of identifying research questions, selecting appropriate methodologies, and targeting the right journals and readers.

To illustrate this problem, consider the example of a hypothetical Ph.D. student named Sarah. Despite her passion for management research, Sarah finds herself struggling to navigate the complex landscape of academia. She is unsure about which research questions to pursue, which methodologies to employ, and which journals to target for publication. Without proper guidance and support, Sarah risks falling into common pitfalls such as "false starts" (rushing into writing papers without adequate validation), "bad bedfellows" (misaligned advisory teams or resources), and premature scaling (rushing into research without enough education).

The root causes of this problem can be attributed to three main factors: the nature of management research, individual-level challenges, and institutional limitations. By understanding and addressing these root causes, we can develop targeted solutions to help early-stage scholars like Sarah optimize their research production strategy and achieve their full potential in the field of management.

2. Literature Review

Paper	Model	Intervention Algorithm	Assumptions to apply the model and algorithm in OM early-stage scholar failure
Fine et al. (2022)	Entrepreneurial operations model	Ten tools for entrepreneurs to scale up	OM research landscape is complex and ever-expanding which gives unique challenges to early stage scholars
Eisenmann (2021)	Failure analysis of startups	Identifying and addressing common pitfalls	Early stage scholars face common pitfalls such as false starts, bad bedfellows, and premature scaling
Acemoglu and Robinson (2012)	Failure analysis of a nation	role of institutions in economic development	Institutional support can lower the failure rate of early stage scholars which is crucial for OM community

The existing literature provides valuable insights into the challenges faced by early-stage scholars and ventures, as well as the role of institutions in fostering success. However, there is a gap in the literature when it comes to addressing the specific needs of early-stage scholars in the field of management.

Fine et al. (2022) propose an entrepreneurial research production model and suggest ten tools for scaling, along with customized training programs. While these insights are valuable, they do not fully address the unique challenges faced by Ph.D. students and early-stage scholars in management.

Eisenmann (2021) identifies common pitfalls faced by startups, such as false starts, bad bedfellows, and premature scaling. These pitfalls are also relevant to early-stage scholars in management, but the solutions proposed in the startup context may not be directly applicable to the academic setting.

Acemoglu and Robinson (2012) highlight the crucial role of institutions in the success or failure of nations and economic systems. This insight can be extended to the academic context, where institutions play a significant role in shaping the research production strategies of early-stage scholars.

By building upon the existing literature and addressing the specific challenges faced by early-stage scholars in management, this work aims to contribute to the development of targeted solutions that can help optimize research production strategies and foster success in the field.

3. Knowledge Production System

Stock and flow diagram below is designed to represent the dynamic interplay of resources and capacities within individual and institutional contexts. For individuals, the goal is to optimize the 'growing' capacities: search, need, method, and delivery. These represent the evolving abilities to identify and address research questions, develop methodologies, and disseminate findings. For institutions, the focus is on optimizing the cycles that these capacities go through: pairing, production, research diffusion, and paper life. These cycles reflect the time and processes involved in matching research capacities with needs, producing methodologies, diffusing research findings, and the lifecycle of academic papers.

The 'stock' variables—such as Speculation, Expertise, and Application—indicate the resources at a given time, like ideas, knowledge, and published work. Objective function that early-stage scholar agents attempt to maximize is 'Usefulness' which is the function of three stock variables. Controllable variables are the ones that can be adjusted, like the time invested in developing methods of disseminating research, to influence the stocks and outcomes. The terms 'capacity' and 'time' refer to the potential for growth and the duration of different stages in the research process. Although not shown in the diagram, additional feedback loop 'investment feedback'

reflects the ongoing reinvestment in research areas that show promise, which is critical for sustaining and growing academic impact.
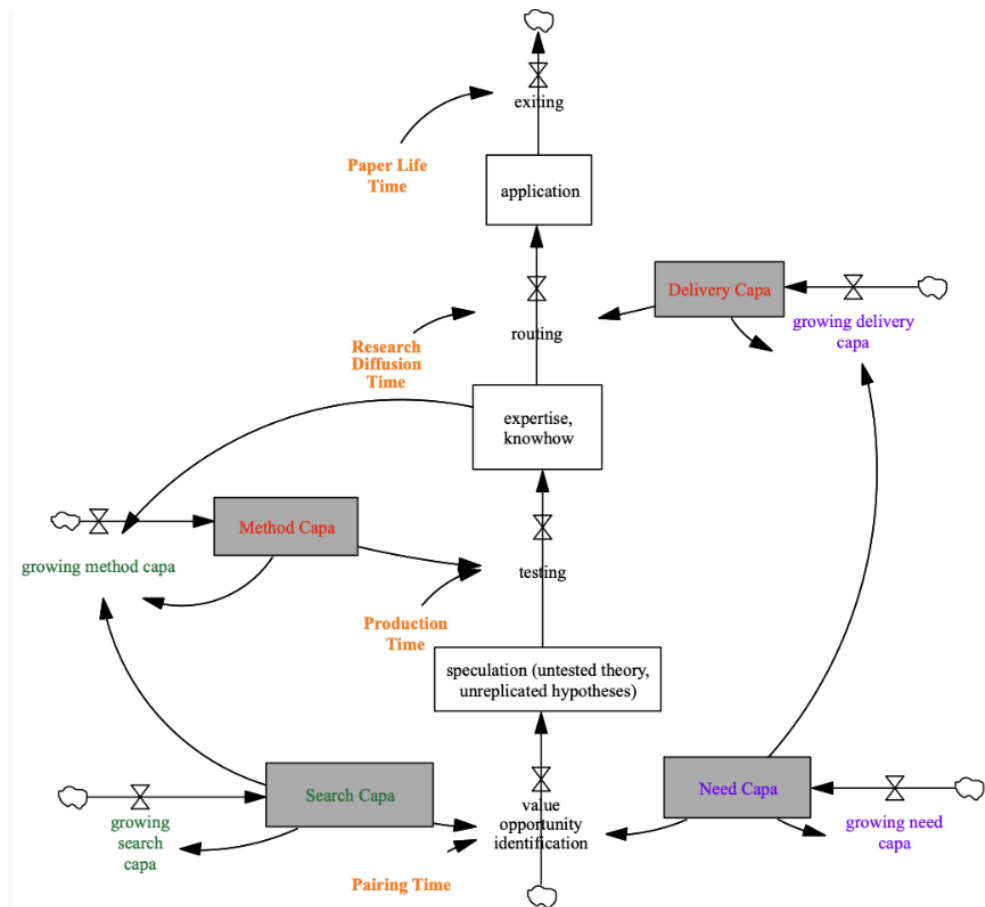
The point of calling it a "capacity" is to get people to realize that building such a thing is not merely about making more "things" but rather is about processes that use those things (e.g., Having more methods does not really make people able to use those methods appropriately without more process infrastructure. We can have as many journals as we want but if they are not appropriately segmented and positioned, the routing will get clogged.

Matt Cronin's proposal of iInstitutional level solution is summarized in 5.2 Institutions.

4 Problem and Solution

4.1 Problem

The problems faced by early-stage scholars in management, as exemplified by Sarah's story in the introduction, can be attributed to three main factors: the nature of management research, individual-level challenges, and institutional limitations. The ever-expanding methodologies and applications in management research create a complex landscape that can overwhelm students who are not trained to strategically manage their capacity in identifying research questions,

selecting appropriate methodologies, and targeting the right journals and readers. At the individual level, early-stage scholars may fall into common pitfalls such as "false starts" (rushing into writing papers without adequate validation), "bad bedfellows" (misaligned advisory teams or resources), and premature scaling (rushing into research without enough education). Institutionally, the lack of organized ways to accumulate and access information, knowledge, curricula, and know-how can further hinder the progress of early-stage scholars.

4.2 Solution

4.2.1 Nature of Management Research:

While the ever-expanding methodology and application in management research cannot be altered, individuals and institutions can adapt their strategies to better navigate this complex landscape.

4.2.2 Individual-Level Solutions:

Early-stage scholars can optimize their resource allocation to grow their capacities in searching for research questions, identifying needs, developing methodologies, and delivering results. This can be achieved through:

- Attending targeted training programs, such as the Ph.D. seminar, to acquire the necessary skills for navigating the journal market.
- Planning capability growth across different scholarly phases, focusing on need identification, search strategies, and delivery methods.
- Listing three potential markets and three products, comparing the product-market fit of the nine combinations, identifying the top three product-market pairs, and reverse-engineering the capacity (education, training) required to avoid false starts and premature scaling pitfalls.

To avoid "bad bedfellows," scholars should seek out aligned advisory teams and resources that support their research goals and methodology.

4.2.3 Institution-Level Solutions:

Institutions can re-optimize the pairing, production, research diffusion, and paper life time by:

- Developing education, training, and tools that enable customization of research output and its production strategy.
- Enhancing testing (either via prediction or other)and routing functions to better match research with appropriate outlets.
- Creating visual tools that provide a comprehensive overview of the management research landscape, including adjacent fields and target journals.

- Establishing interactive platforms that allow for real-time collaboration and knowledge sharing between academics and industry professionals, enabling researchers to better understand and address the unique needs of practitioners.

5. Solution Production Plan

5.1 Individual

step1. Short-listing solution and need candidates:

- Gather information and update priors on market acceptance and size to persuade value propositions and strategize experiments.
- Define an objective function for producers (impact, value, currency in academia).
- Match needs and solutions that maximize the objective function.

step2. Short-listing product and market candidates and identifying product-market fit (PMF)

- Specify desirability with customer feedback and feasibility with supplier feedback.
- Use sampling algorithms that learn covariance among products and markets, translating into covariance among product-market fit. Combine this with the ratio of cost for changing market to changing product to systematically update beliefs on different implementations of the solution (research product, paper) and market acceptance.
- Optimize using news-vendor, parallel, or sequential processes.

step3. Preparing for scaling

- Adopt four roles in enterprise and ten scaling tools from Fine et al. (2022): CTO (professionalize), COO (acculturate, replicate, collaborate, automate, platformize), CFO (capitalize grant writing), and CMO (segment, evaluate via simulation-based calibration (Modrak et al (2023)).

- Plan based on phases: nail stage (test desirability and technical feasibility), scale stage (test operational feasibility and viability, collaborate, segment customers, build community), and sail stage (processify, automate, replicate, platformize, capitalize).

5.2 Institution

Institutions should offer targeted training on capacity planning and collaborative platforms to help Ph.D. students:

- Navigate the complex landscape of academia (e.g., journal geography).

- Customize production strategies (e.g., design experiments and surveys with the highest information gain) by learning how to balance product and market uncertainty and elicit the needs of diverse stakeholders in the knowledge production value chain.
- Self-educate through visual tools that show relationships (e.g., correlation) between products (tested and measured speculation that explains phenomena) and markets (journals).

I connected this with Matt Cronin's work based on his talk "The enterprise", "Theory crisis", "scientist, artist, judge"

Emphasizing the systemic issues (Enterprise talk [transcript])

- compelling case that the root issues are more systemic - the overproduction of "bricks" (individual papers) vs. integrating them into meaningful "edifices" (programmatic theory).
- example: Perhaps we could analyze a sample of early-stage scholar papers and categorize them as isolated "bricks" vs. those that explicitly build toward an "edifice". This would quantify the scope of the problem.
- We could also survey scholars on perceptions of systemic incentives and barriers. E.g. Does the pressure to churn out papers discourage integration? Do siloed domains inhibit building coherent frameworks?

Ensuring relevance to practice (Theory Crisis paper)

- Matt emphasizes the need for management research to actually impact management practice. This resonates with previous concern that PhD students aren't taught to validate their ideas with practitioners.
- example: We could do a case study looking at exemplars of practically-relevant early-stage research and identify best practices. What enabled their work to bridge theory and practice?
- Or we could have PhD students pressure test their research questions and methodologies with a panel of managers, and see how this shapes the direction and applicability of their work.

Balancing the SAJ mindsets

- Matt's scientist, artist, judge framework illustrates the need to integrate discovery (Artist + Scientist), skill (Scientist + Judge) and vision (Artist + Judge). This maps well to critical phases for early-stage scholars.
- example: In the "nail it" phase of testing an idea's desirability, scholars need vision to imagine an impactful direction, but also scientific rigor to actually validate it. We could develop a tool to profile scholars on SAJ and coach them to deploy the right mindsets.
- Similarly, early-stage scholars need discovery to find important problems, but skill to address them with robust methodologies. An SAJ-driven decision framework could guide them to balance "interesting" and "rigorous".

Conclusion

By implementing these individual and institutional solutions, early-stage scholars in management can optimize their research production strategies, leading to increased academic impact and more effective navigation of the complex research landscape. Through targeted capacity building, product-market fit identification, and scaling preparation, individuals can avoid common pitfalls and achieve their research goals more efficiently. Simultaneously, institutions can support these efforts by providing customized training, visual tools, and collaborative platforms that foster knowledge sharing and alignment between researchers and practitioners. By adopting these strategies, the field of management can cultivate a more supportive and productive environment for early-stage scholars, ultimately driving innovation and advancing the discipline as a whole.

References

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thesis: educating early-stage scholars on principled workflow to design experiments to test priors can shorten the time to find their product-market fit
1. market acceptance is highly uncertain
2. parallel production and thunder⚡speed-reconfiguration

success := finding a market (field) with its acceptance higher than the low bar

For startup educators, teaching operations theory doesn't vouch for the use of that theory. Current approach is to teach knowhow (how to use) on top of the theory. However, choosing startups with high theory absorption capacity might be more effective. Just like a startup has a beachhead market, a startup educator should have a beachhead market (segment of startup).

You might say, user-based innovation i.e. startup building theory can enhance develop theory for their own use. but they usually don't have enough bandwidth to establish settled science.

fold := give up to certain search sequence (early stopping) to focus on the other sequence (e.g. saying no to the project that one like, in order to focus on design, develop, produce another)
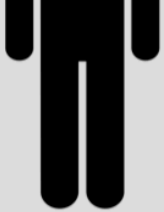
fail := haven't found any market that exceed low bar after certain amount of experiments (e.g. not writing a paper that they like and is liked by the market, by the end of graduation)

angie's production skills

need capacity

solution capacity

dissemination capacity

RATHER WE CAN SPECIALIZE, AND NOT JUST IN TOPICAL AREA

- **Production skills**
  - Generation
    - Design
      - Mixed method
      - Lab/ Field
      - Survey/experiment
    - Data
      - Qualitative/Quantitative
      - Multilevel
      - Network
      - System Dynamic
  - Synthesis
    - Modeling
      - Formal
      - Computational
    - Measurement
      - IRT
      - Scale development
      - AI
    - Review
      - Systematic
      - Integrative

- **Dissemination skills**
  - Teaching
    - Curriculum design
    - Course design
    - Undergrad/grad
    - Short/medium/ long courses
    - MOOCs
    - On-line/hybrid
    - Learning theory
    - Research mentorship
  - Training
    - Content area
      - Negotiation
      - Creativity
      - ...
    - Exercise design
    - Contextualization
    - Needs analysis
    - Training KSAs
    - White papers
    - ...

- **General skills**
  - Writing
    - Books
    - Articles
    - Blogs
  - Presentation
    - Power point
    - Media
    - Lecture
    - Speaking
  - Project management
    - Lab group
    - Grants
    - Research projects
  - Technology
    - Web
    - App
    - Media
    - Statistical
  - Peer Review
    - AE
    - EIC

their predicted market acceptance is a fail because of product-market fit
- lack of ability to measure market acceptance (random, highest uncertainty)
- lack of institutional support on prior testing tools for experiment
- lack of process management (multi-agent)
- time to market

Appendix. table of problem and solution

problem

Step	Substep	Operations Management Research
1. Problem		Knowledge useful for Research production strategy is not customized to early-stage scholars (Ph.D.s) is not routed
2. Root Cause of 1		
	2.1 nature	Burden of knowledge in OM research is large due to its ever-expanding methodology and application but scholar are not trained to strategically manage capacity stocks of `need` (research question with domain knowledge), `search` (methodology), `deliver` (identify journals and readers).
	2.2 individual	- "false starts" (rushing into writing papers without adequate validation) - "bad bedfellows" (misaligned advisory teams or resources) - pre-mature scaling (rushing into research without enough education)
	2.3 institution	Institution doesn't provide organized way for information (finding, knowledge, curricula, knowhow) to be accumulative and accessible
3. Solution		
	3.1 sol(2.1)	It is OM's nature. Can't solve.
	3.2 sol(2.2)	individual-wise, we can optimize resource allocation to `growing search, need, method, delivery capa` - attend targeted training programs, such as EMTOM PhD seminar, to equip Ph.D. with the skills needed to navigate journal market. - plan capability growth of `need`, `search`, `deliver` across different scholarly phases. - list three markets and three products, compare product market fit of nine combinations, identify top three product-market pair then reverse engineer capacity (education, training,) to avoid false start and pre-mature scaling pitfalls - Q2. how to avoid bad bedfellows?
	3.3 sol(2.3)	institution-wise, we can re-optimize `pairing, production, research diffusion, paper life time` - develop education, training, tools that enable customization of research output and its production strategy. - enhance testing and routing function - create visual tools that provide a comprehensive overview of the operations management research landscape, including adjacent fields and target journals - establish interactive platforms that allow for real-time collaboration and knowledge sharing between academics and industry professionals (need, data supplier), enabling researchers to better understand and address the unique needs of practitioners.

solution		
4. Solution Production plan of individual		Develop and implement a comprehensive suite of tools, including visual maps of the research landscape, customized training programs for PhD students and researchers, and interactive platforms for academia-industry collaboration and knowledge sharing.
	4.1	**Short-listing solution and need candidates** 1. gather information and update priors on market acceptance and size to persuade value proposition and strategize experiments 2. define objective function for producers (impact, value, currency in academia) 3. match needs and solutions that maximize objective function
	4.2	**Short-listing product and market candidates and identifying product-market fit (PMF)** 1. specify desirability with customer feedback and feasibility with supplier feedback 2. sampling algorithms that learns covariance among products and covariance among market segments which translates into covariance among product-market fit. by combining this with ratio of cost for changing market to changing product we can systematically update our belief on different implementation of our solution (research product, paper) and belief on market acceptance of our solution. 3. optimizing: News-vendor, parallel vs. sequential processes
	4.3	**Preparing for scaling** 1. four roles in enterprise and scaling tools - CTO: professionalize (e.g. modeler) - COO: acculturate, replicate, collaborate (collaborator outside academia e.g. partnering with samsung hospital, Wayfair), automate, platformize (community), processify - CFO: capitalize grant writing - CMO: segment, evaluate 2. phase-based planning **nail stage** - test desirability and technical feasibility of our research question - iterate between phenomena, theory, measurement to nail our value proposition that satisfies us, customer (paper reader or our future students), investor (advisor) **scale stage** - test operational feasibility and viability of our research before investing significant time and energy - **collaborate** with equipment providers (data and tool providers), sampled customers (trusted colleagues and faculty), investor (referee), using and to develop our **profession** - **segment** customer and set beachhead (research outlet's audience) - build community both from supply and demand side and **acculturate** our vision, share progress in the language of aligned **evaluation** metric - compare perspectives on blitzscaling vs. premature scaling **sail stage** - **processify** the above that helps us **automate ,replicate, platformize, capitalize** the knowledge creation itself
5. Solution production plan of institution		Institution should offer targeted training on capacity planning and collaborative platforms. This can help phds better 1. navigate the complex landscape of academia (e.g. journal geography) 2. customize production strategy (e.g. design experiment and survey with highest information gain) by learning how to balance product and market uncertainty and elicit needs of diverse stakeholders in knowledge production value chain e.g. designer, developer, supplier, distributor, customer 3. self-educate through visual tools that shows relationship (e.g. correlation) between products (tested and measured speculation that explains phenomena) and markets (journals)

Bill starbuck's research review system