Class 1 - Research I: Principles

Agenda

- Introductions (30 minutes)
  - Getting to know each other
  - Syllabus and materials overview
  - Typical class flow
- Break (5 minutes)
- Skills corner: The craft of research (25 minutes)
- Readings for today (60 minutes)

Introductions

A little about me

A little about me

A little about me

A little about you

Please remember to fill out your introductory Qualtrics survey so that I can learn a bit about you and your goals for the class!

Today, let's level set on your familiarity with some key ideas: Pollev.com/drfox

Syllabus and materials overview

- Syllabus
- Brightspace
- Dropbox (download a local copy for yourself, feel free to add selective highlights for group discussions)
- PollEverywhere
- Miro

Typical class flow

- *Part I:* Conceptual grounding and agenda setting
  - Introduction to topics covered
  - Skills corner (this will migrate over the semester)
- *Part II:* Core paper discussion
  - We will discuss the 2-3 papers that all students have been assigned to read in detail
  - These papers typically will provide a mix of conceptual background and how-to guides
- *Break*

Typical class flow

- *Part III:* Activity period
  - (Weeks 2 – 7) Compare / contrast: One group tasked with reviewing two additional papers to explain their points of intersection, divergence, and ties to core papers
  - (Weeks 8 – 14) Replication: One group tasked with using data from one of my current or published papers to replicate analyses and comment on that process and raise questions for general awareness

Typical class flow

- *Part IV:* Summative lecture on concepts
  - I will make a brief presentation to tie together and highlight key concepts
  - Elements missed in the general discussion will be given greater focus

Skills corner

Reading, understanding, writing, crafting

Scholarship is more or less developed in that order

- First you read (a lot, broadly and narrowly)
- Enough reading helps you start to understand (both in terms of content as well as analysis)
- When you have understand enough, you can start writing your own thoughts
- Those thoughts are put out into the world and receive "feedback" through the review process
- Feedback helps you course correct, identify limitations in your understanding or how you are articulating your ideas
- After enough cycles, you begin to craft your research

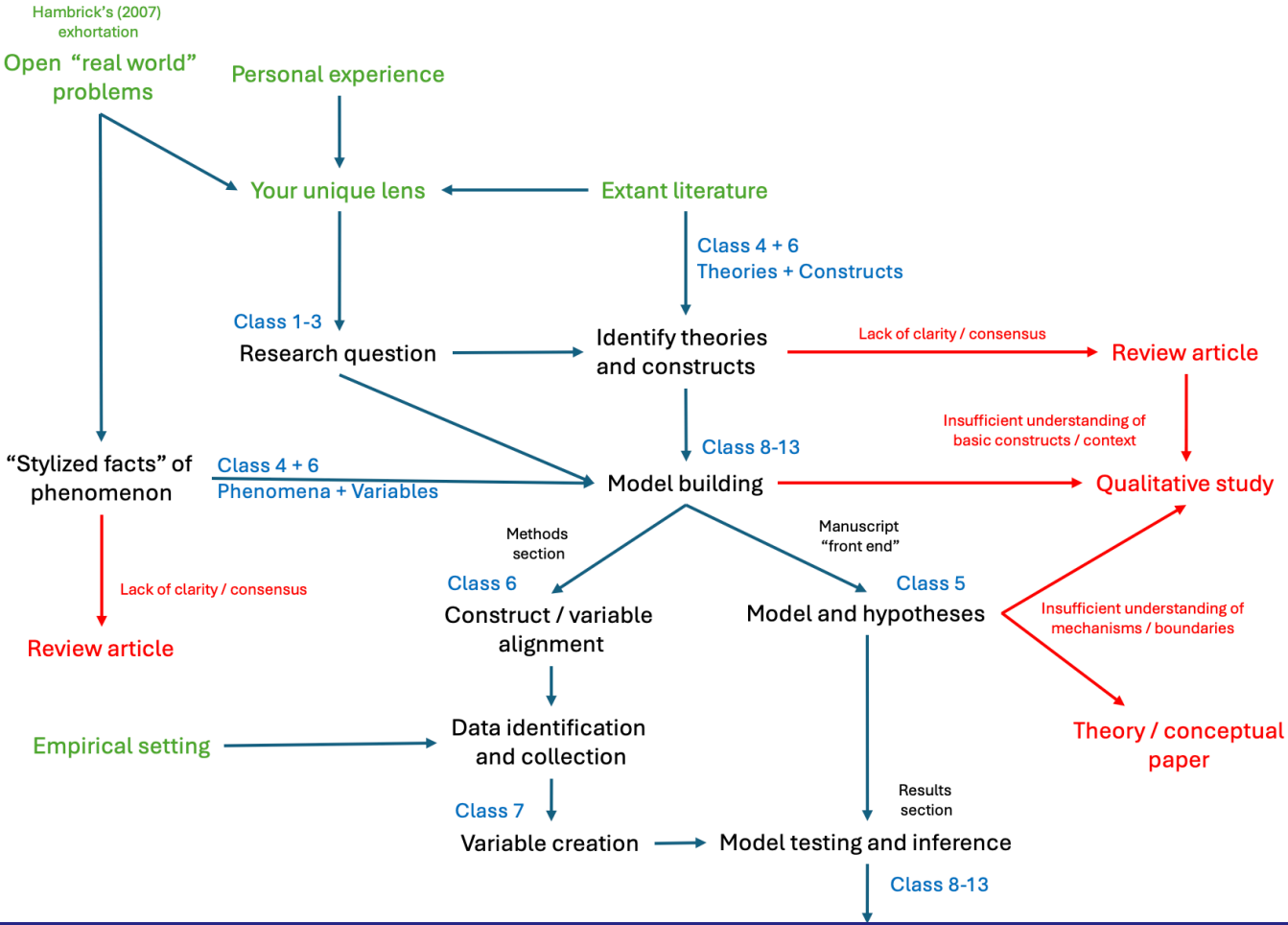
Crafting research, simply put

- Research (at least in our field) is not manufactured, it is crafted:
  to make or produce with care, skill, or ingenuity (Merriam-Webster Dictionary)
- Skill: Developing "soft" (theory-building) and "hard" (model-building) capabilities to make and defend a thesis
- Ingenuity: Having the creativity and base of information to go beyond what is known
- Care: Exerting due time and effort in putting together your analyses and arguments

Scholarly contributions

- Your task in this program is to advance human knowledge in a non-trivial way
- Academics tend to prefer theoretical contributions (we will see why later)
  - This means that the web of knowledge for a given theory has been modified
- These contributions are often directional, with respect to a target audience
  - Example: Nash equilbria (von Neumann versus economists)
- This may run counter to your goals and preferences to make a practical contribution
  - example: explain versus optimize

A pictoral representation of the research process (we will revisit this in class 7)



Discrete skills required to complete that process

- Reading articles for multiple purposes
- Summarizing your observations
- Articulating research questions and associated hypotheses
- Selecting appropriate empirical contexts and collecting data
- Employing different analytical techniques to examine that data
- Drawing inferences and explaining how these conclusions can advance the literature

Motivating the Class: Research Methods Matter!

As a case study, Let's consider the last paper assigned for today: Delios et al. 2025

Delios et al. (2025)

Analysts used a wide variety of specifications to conduct their analyses. No two analysts adopted the same approach when we consider the variables, method, and sample selec- tion simultaneously. Material 4 on OSF provides a detailed summary table describing the specifications employed by each analyst for each research question. Supplement 2 sum- marizes the control variables used by the analysts.

To achieve a standardized measure of the effect sizes of the independent variables on dependent variables across all analyses, we computed the marginal effect sizes (Breznau et al., 2022; Fey et al., 2023), which represent the increase in a dependent variable for a unit increase in an independent variable. In Fig. 1, we present the distribution graphs of the effect size estimates found in the separate analyses for each research question. For all four research questions, the range of estimates encompasses both negative and positive values and crosses zero.

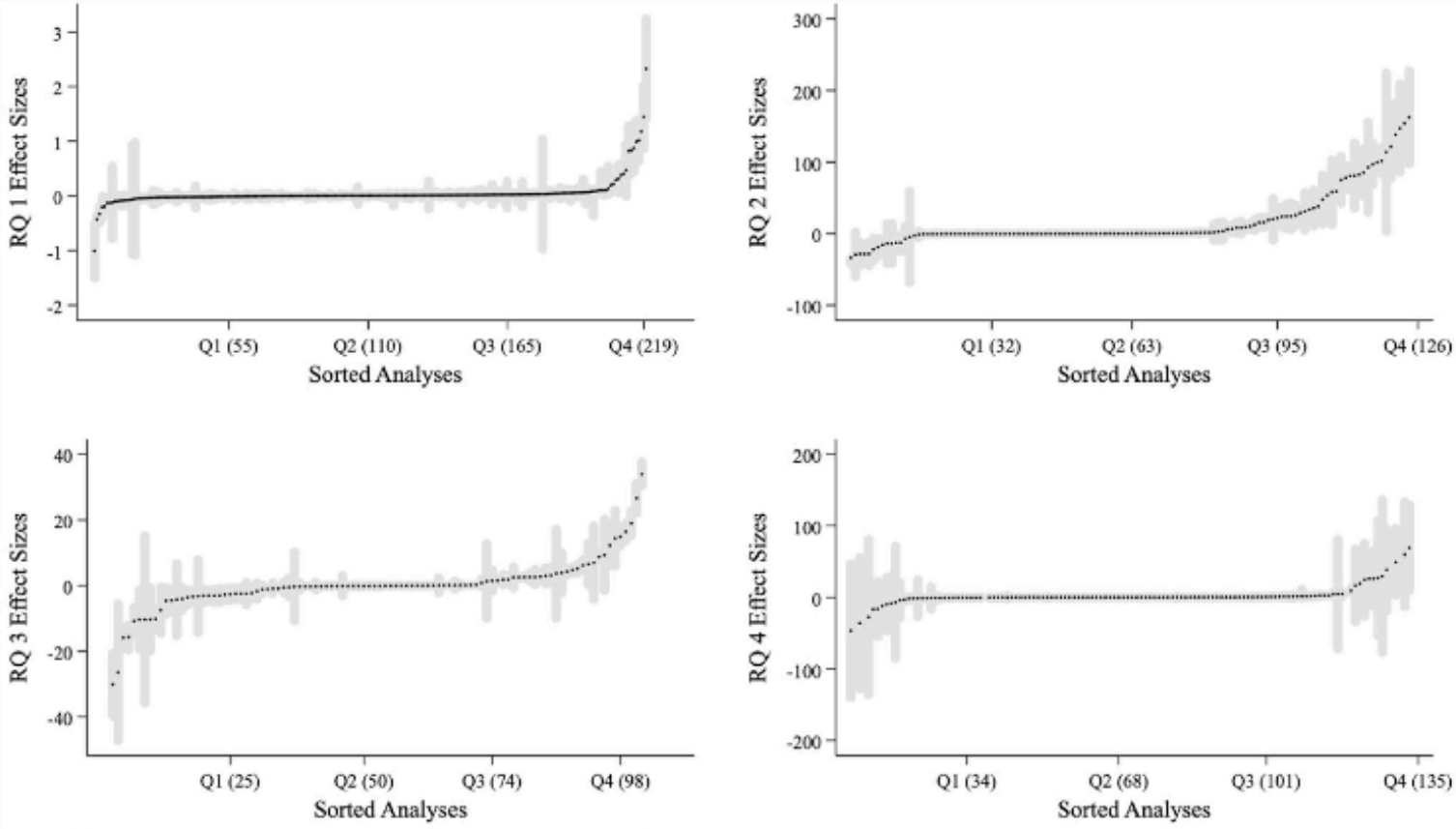


Fig. 1 Analysts' reported marginal effect sizes from their tests of four international business research questions. *Notes*: Quartiles of the number of analyses and 95% confidence intervals of the effect sizes are as indicated in the figure

Beliefs about the research question measured at the end of the study were more strongly related to empirical estimates than beliefs measured before receiving the data. This is a similar pattern to that previously captured in Silberzahn et al. (2018), but with more units of observation, lending the results further credibility. It seems that scientists rationally updated their beliefs considering the evidence. We again find no apparent confirmation bias, such that researchers' precon- ceptions strongly predict their analytic choices and results

Core Readings for Today

Preamble

I have provided some discussion questions for us to consider in case we need to get the ball rolling.

We may or may not discuss those questions depending on the flow of the class.

In general, I would rather talk about your ideas and questions rather than these "canned" items.

Readings

1. Popper, K. R. (2002). The Logic of Scientific Discovery. Routledge. [Ch .1]
2. Mantere, S., & Ketokivi, M. 2013. Reasoning in Organization Science. Academy of Management Review, 38(1), 70-89.
3. Nosek, B. A. & Errington, T. M. 2020. What is replication? PLOS Biology: 1-8.
4. Rynes, S. L., & Bartunek, J. M. (2017). Evidence-Based Management: Foundations, Development, Controversies and Future. Annual Review of Organizational Psychology and Organizational Behavior, 4(1), 235-261.

Popper (2002)

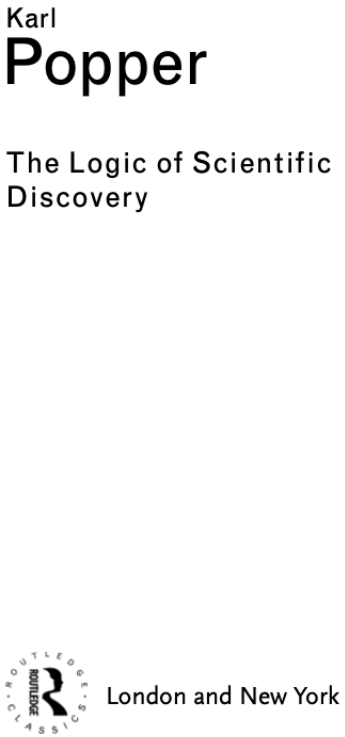
The Logic of Scientific Discovery. [Ch .1]

> *According to the view that will be put forward here, the method of critically testing theories, and selecting them according to the results of tests, always proceeds on the following lines. From a new idea, put up tentatively, and not yet justified in any way — an anticipation, a hypothesis, a theoretical system, or what you will—conclusions are drawn by means of logical deduction [...]*
> *[Then,] there is the testing of the theory by way of empirical applications of the conclusions which can be derived from it. [p. 9]*

Popper (2002)

Discussion Questions

- In your view, what is the main point?
- Do this worldview currently inform your work? How might it?



Mantere and Ketokivi (2013)

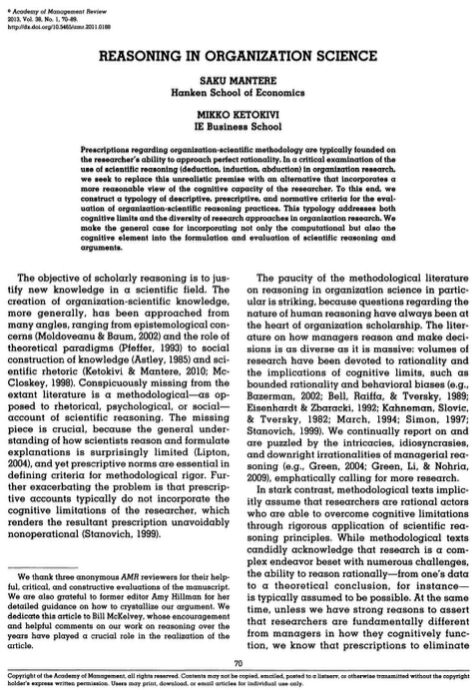
Reasoning in Organization Science. Academy of Management Review, 38(1), 70-89.

> *Labels aside, a closer look at research practice reveals that researchers across research traditions use all three forms of reasoning. It is hardly surprising to observe that we all make inferences to a case (use deduction), inferences to generalizations (use induction), and inferences to explanations (use abduction). Thus, using reasoning types as labels to describe entire research designs is misleading. Instead, differences between research approaches, whatever they may be, are found not in the types of reasoning used but, rather, in how the three reasoning types are used in conjunction with one an other. (p. 76)*

Mantere and Ketokivi (2013)

Discussion Questions

- What mode(s) of reasoning do you tend to rely on in your current work?
- What concrete practices did you draw from this paper, if any?



* Academy of Management Review
2013, Vol. 38, No. 1, 70–89.
http://dx.doi.org/10.5465/amr.2011.0188

REASONING IN ORGANIZATION SCIENCE

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Prescriptions regarding organization-scientific methodology are typically founded on the researcher's ability to approach perfect rationality. In a critical examination of the use of scientific reasoning (deduction, induction, abduction) in organization research, we seek to replace this unrealistic premise with an alternative that incorporates a more reasonable view of the cognitive capacity of the researcher. To this end, we construct a typology of descriptive, prescriptive, and normative criteria for the evaluation of organization-scientific reasoning practices. This typology addresses both cognitive limits and the diversity of research approaches in organization research. We make the general case for incorporating not only the computational but also the cognitive element into the formulation and evaluation of scientific reasoning and arguments.

The objective of scholarly reasoning is to justify new knowledge in a scientific field. The creation of organization-scientific knowledge, more generally, has been approached from many angles, ranging from epistemological concerns (Moldoveanu & Baum, 2002) and the role of theoretical paradigms (Pfeffer, 1993) to social construction of knowledge (Astley, 1985) and scientific rhetoric (Ketokivi & Mantere, 2010; McCloskey, 1998). Conspicuously missing from the extant literature is a methodological—as opposed to rhetorical, psychological, or social—account of scientific reasoning. The missing piece is crucial, because the general understanding of how scientists reason and formulate explanations is surprisingly limited (Lipton, 2004), and yet prescriptive norms are essential in defining criteria for methodological rigor. Further exacerbating the problem is that prescriptive accounts typically do not incorporate the cognitive limitations of the researcher, which renders the resultant prescription unavoidably nonoperational (Stanovich, 1999).

We thank three anonymous *AMR* reviewers for their helpful, critical, and constructive evaluations of the manuscript. We are also grateful to former editor Amy Hillman for her detailed guidance on how to crystallise our argument. We dedicate this article to Bill McKelvey, whose encouragement and helpful comments on our work on reasoning over the years have played a crucial role in the realization of the article.

The paucity of the methodological literature on reasoning in organization science in particular is striking, because questions regarding the nature of human reasoning have always been at the heart of organization scholarship. The literature on how managers reason and make decisions is as diverse as it is massive: volumes of research have been devoted to rationality and the implications of cognitive limits, such as bounded rationality and behavioral biases (e.g., Bazerman, 2002; Bell, Raiffa, & Tversky, 1989; Eisenhardt & Zbaracki, 1992; Kahneman, Slovic, & Tversky, 1982; March, 1994; Simon, 1997; Stanovich, 1999). We continually report on and are puzzled by the intricacies, idiosyncrasies, and downright irrationalities of managerial reasoning (e.g., Green, 2004; Green, Li, & Nohria, 2009), emphatically calling for more research.

In stark contrast, methodological texts implicitly assume that researchers are rational actors who are able to overcome cognitive limitations through rigorous application of scientific reasoning principles. While methodological texts candidly acknowledge that research is a complex endeavor beset with numerous challenges, the ability to reason rationally—from one's data to a theoretical conclusion, for instance—is typically assumed to be possible. At the same time, unless we have strong reasons to assert that researchers are fundamentally different from managers in how they cognitively function, we know that prescriptions to eliminate

Nosek and Errington (2020)

What is replication? PLOS Biology: 1-8.

> *To be a replication, 2 things must be true: outcomes consistent with a prior claim would increase confidence in the claim, and outcomes inconsistent with a prior claim would decrease confidence in the claim. The symmetry promotes replication as a mechanism for confronting prior claims with new evidence. Therefore, declaring that a study is a replication is a theoretical commitment. Replication provides the opportunity to test whether existing theories, hypotheses, or models are able to predict outcomes that have not yet been observed. (p. 2)*

Nosek and Errington (2020)

Discussion Questions

- Do you agree with their definition of replication?
- How does this fit in with the replication crisis?

PLOS BIOLOGY

PERSPECTIVE

What is replication?

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Abstract

Credibility of scientific claims is established with evidence for their replicability using new data. According to common understanding, replication is repeating a study's procedure and observing whether the prior finding recurs. This definition is intuitive, easy to apply, and incorrect. We propose that replication is a study for which any outcome would be considered diagnostic evidence about a claim from prior research. This definition reduces emphasis on operational characteristics of the study and increases emphasis on the interpretation of possible outcomes. The purpose of replication is to advance theory by confronting existing understanding with new evidence. Ironically, the value of replication may be strongest when existing understanding is weakest. Successful replication provides evidence of generalizability across the conditions that inevitably differ from the original study. Unsuccessful replication indicates that the reliability of the finding may be more constrained than recognized previously. Defining replication as a confrontation of current theoretical expectations clarifies its important, exciting, and generative role in scientific progress.

Introduction

Credibility of scientific claims is established with evidence for their replicability using new data [1]. This is distinct from retesting a claim using the same analyses and same data (usually referred to as *reproducibility* or *computational reproducibility*) and using the same data with different analyses (usually referred to as *robustness*). Recent attempts to systematically replicate published claims indicate surprisingly low success rates. For example, across 6 recent replication efforts of 190 claims in the social and behavioral sciences, 90 (47%) replicated successfully according to each study's primary success criterion [2]. Likewise, a large-sample review of 18 candidate gene or candidate gene-by-interaction hypotheses for depression found no support for any of them [3], a particularly stunning result considering that more than 1,000 articles have investigated their effects. Replication challenges have spawned initiatives to improve research rigor and transparency such as preregistration and open data, materials, and code [4–6]. Simultaneously, failures-to-replicate have spurred debate about the meaning of replication and its implications for research credibility. Replications are inevitably different from the original studies. How do we decide whether something is a replication? The answer shifts the conception of replication from a boring, uncreative, housekeeping activity to an exciting, generative, vital contributor to research progress.

OPEN ACCESS

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Provenance: Commissioned; not externally peer reviewed.

Rynes and Bartunek (2017)

Evidence-Based Management: Foundations, Development, Controversies and Future.

> *Management academics have long noted a large gap between academic research and managerial practice. [...] Some have viewed the causes of the gap as lying primarily with academic researchers, who are characterized (perhaps caricatured) as having become overspecialized, self-referential, obsessed with theory, excessively mathematical, jargonladen, unconcerned about practical problems, and dismissive of practitioners [...] Others have focused on practitioners, who are sometimes characterized or caricatured as research phobic, anti-intellectual, susceptible to unproven fads and fashions... (p. 236)*

Rynes and Bartunek (2017)

Discussion Questions

- Are you familiar with evidence-based practice from your current work?
- Where might you fit in helping to advance evidence-based management? How might you go about doing it?

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Evidence-Based Management: Foundations, Development, Controversies and Future

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Keywords

evidence-based management, evidence-based practice, research–practice gap, academic–practitioner relationships, systematic reviews

Abstract

We review the recent development of evidence-based management (EBMgt), tracing its origins to longstanding gaps between research and practice, discrepant findings across studies, and the emergence of evidence-based medicine (EBMed). We provide a definition of EBMgt and review four foundational articles advocating its use. We then review categories of articles that comprise the EBMgt canon: advocacy articles, essays or perspectives, teaching-related, empirical, reviews, and critiques and responses. Critiques include political, epistemological, and methodological issues directly pertinent to EBMgt as well as broader concerns about the scholarly research base on which EBMgt depends. Our suggestions for future research emphasize, first and foremost, increasing the production of high-quality empirical studies in EBMgt. Topics of particular interest include research co-creation by academics and practitioners, process and outcome studies of EBMgt implementations, and practitioners' use of evidence in their working environments. We also call for broader types of systematic reviews (SRs) than have generally been conducted in the organization sciences.

Preparation for Next Class

Next class

Research II: Positions

1. Huff, A. S. (1999). Writing for Scholarly Publication. [Chs. 1, 3]
2. McGrath, Joseph E. (1981) Dilemmatics: The Study of Research Choices and Dilemmas, American Behavioral Scientist, 25, 2, 179-210.
3. Simsek, Z., Heavey, C., Fox, B. C., & Yu, T. 2022. Compelling Questions in Research. Journal of Management, 48(6), 1347-1365.
4. Tushman, M., & O'Reilly, C. (2007). Research and Relevance: Implications of Pasteur's Quadrant for Doctoral Programs and Faculty Development. AMJ, 50, No. 4, 769-774.

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