Engaging with scholarly research - A guide for decision analysis practitioners

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Engaging with scholarly research: A guide for decision analysis practitioners

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You

• Read practitioner publications?
• Read science journals?
• Read management journals?
• Conduct research?
Me

• Experience
• Research
• Profession

→ My objectives
Impressions of scholarly research for business

- Academic = Not useful
- Esoteric
- Impenetrable jargon
- Indecipherable stream of Greek letters
- Academics talking to each other
Why are journal articles the way they are?

• What scholarly researchers
  – Want relevance
  – Need scholarly reputation

• Goals of journals
  – Efficient communication → jargon & notation
  – Building body of knowledge → extra discussion

• Peer review gatekeeping process
  – Correctness
  – Novelty
  – Interest
New research has to be situated within existing theory
Other research: Relevant, applicable, insightful

- Case histories
- Consulting frameworks
- Software products
- White papers
- Benchmarking
- Internal
  - Experience
  - Developments
  - Solutions
  - Reports
  - Expertise

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Why can accessing scholarly research be worth your time?

- Full *body of knowledge*
- Describes what works
- (Ideally) Reliable and durable
- Provides options
- Explains effect of context
- Contains technical details for implementation

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A general approach to using scholarly research

Scope  
Scan  
Filter  
Read

Interpret  
Adapt and synthesize  
Apply  
(Contribute)
Scoping the universe of potentially relevant work
Scholarly research answers questions

- Lab sciences/empirical... What happens if we...?
- Engineering/validation... How can we...?
- Management/sociology... Why do people...? When does?...
- Mathematics... How do we know...? What can we say...?
- Much rarer: How should we...?

Articles of each type require particular features and structure

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Many business research literatures of interest to business managers

Disciplines
• Decision making
• Optimization
• Project management
• Finance
• Technology management
• Organizational theory
• Information systems
• Strategy / marketing

Complexities
• Organizational
• Mathematical
• Technology
• Financial
• Timing
• Judgments
• Large-scale systems

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Example: Portfolio decision analysis (PDA) defined

• Use of decision analytic methods such as decision trees, probability assessment, value hierarchies

• Applied on problems involving the selection of multiple alternatives from a larger set of possibilities

• Typically involves
  – (1) Decision analysis at the project level
  – (2) Optimization at the portfolio level
  – (3) A system to dovetail (1) & (2)
PDA draws on several core literatures

• Financial portfolio theory
  – Statistics meets money starting in 1950s

• Capital budgeting –
  – Linear programming meets big business starting in early 1960s

• Project selection
  – Management science meets corporate R&D starting in the late 1960s

• Decision analysis
  – Decision making view meets other streams starting in the late 1970s
As PDA matures, it draws on and develops wider theory

• Cross fertilization across applications
  – Pharma, energy, government, etc.
• Modeling approaches
  – Dynamic & stochastic programming
  – Multi-attribute & real options valuation
  – Robust partial information
• Software tools
  – Enterprise systems
  – Dashboards
• Organizational issues
  – Change / acceptance/ diffusion

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Future directions for portfolio decision analysis

• Hard side
  – Organizational decision process
  – Incorporating big data
  – New mathematical methods

• Soft side
  – Behavioral research
  – Human interfaces
  – Facilitation and learning
Scanning the possibilities

Scope → Scan → Filter → Read

Interpret → Adapt and synthesize → Apply → (Participate)
Scanning tools

• scholar.google.com
• Following the scent
• Article databases
• Researchers themselves
• Review articles / books
Some journals in the relevant universe

Technology management
Journal of Product Innovation Management
Research Technology Management
International Journal of Project Management
Technovation
IEEE Transactions on Engineering Management
R&D Management
New Product Development
European Journal of Innovation Management
Research Policy
...

Technical (non business)
e.g., for Pharma
Therapeutic Innovation & Regulatory Science (previously Drug Information Journal)
Nature Reviews Drug Discovery
Computers & Chemical Engineering
Society of Petroleum Engineers (M.E.)
...

Optimization / decision making
Decision Analysis
EURO Journal on Decision Processes
Management science
Interfaces (applied)
European Journal of Operational Research
Omega
Judgment and decision making
...

Other
Journal of Finance
Harvard Business Review
Strategic Management Journal
...

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Filter down to the most useful articles

Scope → Scan → Filter → Read

Interpret → Adapt and synthesize → Apply → (Participate)
Journal quality indicators

• Metrics (objective & subjective):
  – ISI Impact factor
  – Google Scholar metrics
  – Top journal lists (Business Week, Financial Times)
  – Association affiliations /publisher (e.g., INFORMS, Nature)
  – Letter rankings
    • National accreditor lists (ABDC, ABS)
    • Journal Quality List www.harzing.com/jql.htm

• What it means
  – A+: Everything is high quality, may not find much relevant
  – A / B+: Everything should be pretty high quality, larger universe of potential relevance
  – B/C: Still some very good material, some not so good, an even larger universe;
  – Niche journals often B/C but can be better than ranking
  – No impact factor, no ranking, no association – many vanity & junk journals
Article quality indicators

- Relevance
  - Well-defined questions?
  - Indications of interest in / awareness of practice?
  - Could it tell you something you don’t know
- Reliability
  - Is there enough substance in it? Do you buy it?
    - data, analysis, testing? math, detailed application
    - Too many delicate assumptions?
- Researcher biography
  - A noisy signal
- References
  - Not too little
  - Where and when are references from?
  - Other reasons to look them over
- Recency
  - Shelf life depends on type of work

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Read quickly and clearly by cracking the code

Scope → Scan → Filter → Read

Interpret → Adapt and synthesize → Apply → (Participate)
How to skim

• Front matter & back matter
  – Is it worth looking further?

• Questions asked
  – Motivation / hypotheses

• How answered
  – Methods section
  – How much data / how validated

• What was the answer
  – Results section
Cracking the code: Structure

• Motivation/introduction
  – what it’s really about
• Literature review
  – what it borrows, where it will add
• Methods and assumptions
  – What will be done, and how we’ll know if it worked
• Data & analysis (various forms)
• Results (various forms)
• Discussion
  – if good, connects to practice AND theory

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Cracking the code: The jargon

• Empirical
  – Defined formal *constructs* (built on prior work) that sound like informal *concepts*
  – Defined *measures* built on prior work
  – Inferential statistics (*p*-values, *confidence intervals*, *chi-squared tests*) – for the referees

• Mathematical
  – *Notation* – really just a big spreadsheet
    • Intimidating at first, but you learn it
  – *Proofs* – for the referees

• Applied / engineering
  – Some self-made terms
Interpret the research

Scope → Scan → Filter → Read

Interpret → Adapt and synthesize → Apply → (Participate)
What does it say as research?

- What are limitations
- What are assumptions
- What are connections
Adapt to your company’s needs

Scope → Scan → Filter → Read

Interpret → Adapt and synthesize → Apply → (Participate)
Take from theory the *parts* that will help your company

What is unique about your situation?
What are you really looking for?

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Apply

Scope  Scan  Filter  Read

Interpret  Adapt and synthesize  Apply  (Participate)

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First own the knowledge

- Look the pieces of theory that you need
- Pick any low-hanging fruit
- Design changes to management systems
- Encode algorithms and equations
How and why to participate in the dialog

Scope  Scan  Filter  Read

Interpret  Adapt and synthesize  Apply  (Participate)
Why participate in scholarly research

• Add to your own brand
  – Within the company
  – Beyond
• Gain from the process
• We all win
Find the nuggets from your company’s experience that can add to theory

Theory

Relevant to company

Relevant to theory

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How to participate in scholarly research

• Roles to consider
  – Lead: Share your ideas and lessons learned
  – Partner: Test ideas
  – Supporter: Serve as a study site
  – Friend: Let scholars know what you think

• Competitive concerns to resolve
  – Non-disclosure agreements
  – Disguising data
  – Protecting trade secrets

• Ingredients of success
  – Commitment: Result to article 100+ hours writing, 1+year elapsed
  – Skills: May collaborate with professors for positioning & writing
  – Confidence: Take responses in stride, don’t be discouraged as long as you know your ideas are good
Enjoy the rest of the conference!