Opportunities in Behavioral Research: Management of Technology

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Overview of Presentation

Briefly:
- Special Issue of MOT
- MOT Dept already published behavioral research
- Open to any research method

Focus:
- Future themes for MOT-behavioral research
Call for Papers:

Special Issue of *Production & Operations Management* on *Management of Technology*

Submission deadline October 1, 2015
Call for Papers: Special Issue on MOT
Deadline October 1, 2015

Regular research papers

Invited “thought leader” articles to inspire new research:
- Linda Argote (& Manpreet Hora) (learning, knowledge…)
- Laura Kornish (idea generation & selection)
- Hau Lee (& Glen Schmidt) (SCM & MOT)
- Mike Lenox (& Raul Chao) (entrepreneurship, strategy)
- Christoph Loch (behavioral issues in MOT)
- Barrie Nault (& Sulin Ba) (economics of info techn-MOT)
- Chris Shalley (& me) (creativity vs standardization)
Management of Technology Department

How design, implement, & manage innovations in science & technology to improve performance:

- **Internal resource capabilities** (knowledge embedded in workforce, technical systems, processes,...)
- **External resource capabilities** (global network of collaborators, suppliers, delivery channels...)
- **Intra and inter-organizational business practices**
- **Service & manufacturing**

Gaimon, POM 2008; POM website

- **Primary data empirically** analyze how worker expertise, info sharing quality, & psych safety impact performance of manuf process improvement projects.


- **Primary data empirically** analyze team autonomy and psych safety in relation to high vs. low project-organizational metric alignment and high vs. low relative exploration.
“The Impact of Complexity on Knowledge Transfer Manufacturing Networks” Lang, Deflorin, Dietl, Lucas (*POM*, Nov 2014)
- Use **NK landscape** & find that impact of KT on performance improvement and the cost of adaptation in a multi-plant manuf network depends on the complexity of production processes and heterogeneity of plants.

- **Survey-based research** shows compliance perf is impacted by location “congruence” between manuf plant and firm headquarters; but compliance perf not unilaterally impacted by cultural differences & depends on specific cultural dimensions.

- **Longitudinal field study** using socio-technical systems theory to understand impact of ICT on job characteristics, satisfaction, & performance in banking industry in India.


- **Controlled experiments** to assess performance implications and barriers of IT-based resource planning systems intra-organizational communications.
ALREADY Published by MOT Dept.


- Intro framework to quantify content of user-generated text from social media using automatically extracted signal cues and empirically demonstrate usefulness to perform product defect discovery. **Data from 2 case studies:** apple support forum; 3 auto manuf forums.

Impact of Customer Traffic and Service Process Outsourcing on E-retailer Operational Performance,” Perdikaki, Peng and Heim (POM to appear)

- Using **survey data from Internet Retailer Mag (2008-12), empirically show** that while customer traffic is key driver of outsourcing decisions, relationship between outsourcing, operational performance, and customer satisfaction differ for back-end and e-retail services.
Management of Technology Department is open to variety of research methods *including*:

**Empirical** (survey-based, primary and secondary data, longitudinal, cross-sectional)

**Optimization** (single firm vs. game; stochastic vs. deterministic, dynamic vs. static)

**Experimental** (lab and field)
Example of Synergy of Research Methods

Leverage insights from **empirical research** in OB:
- Absorptive capacity

Introduce/analyze **game theoretic** model of buyer-supplier knowledge outsourcing:

**Lab experiments**
- How does a supplier’s **tolerance for risk and ambiguity** drive each decision-maker to deviate from “optimal” behavior?

*Research with Jaeseok Lee and Karthik Ramachandran*
Themes for MOT behavioral research:

- Design, develop, implement new science & techn projects
- Collaboration & organization boundaries (alliances…)
- Project mgr, plant mgr, & leadership
- Knowledge worker
- Project tasks (micro-level)
- Large established firm vs entrepreneurial firm

Relevant papers in POM, Mgt Sci, MSOM, OrgSci, Academy of Mgt… Thank Wayne Fu
Theme 1: New Science & Techn Projects

How does anchoring on past experience (success or failure) impact manager’s:

- **Resource commitment** to develop new science & techn?
- **Selection of future projects** to develop?

How are above also impacted by:

- **rewards and tolerance for failure**; and
- **feedback, ability to learn, and goal setting**.

How do information techn vs. communication techn impact **autonomy & control** of knowledge workers who develop new science & techn?
Theme 2: Knowledge Workers

What is the impact on the outcome of design, development or implementation of new science & techn due to:

(i) worker heterogeneity, & (ii) teams organized by function (depth) versus scope (breadth)?

How do group versus individual performance criteria impact success?

Should employees compete in teams or as individuals to drive success?

How do competitive incentive schemes impact cognitive effort (working smarter) versus labor effort (working harder)?
Theme 3: Plant Manager/Worker

What drives mgr to **over or underestimate the cost and benefits** of implementing new sci & techn? How does the **current over versus underestimation** impact the future allocation of innovation resources?

How does the mgr’s **performance review cycle** impact the **outcome (success, failure, cancellation)** of a new sci & techn project?

How do innovations either facilitate or impede the **autonomy, span of control, and performance** of managers and plant workers? Do different types of science & techns have different impacts?
Theme 4: Leadership in MOT Projects

What is the impact of leadership on individual workers versus groups involved in design, development & implementation of new science & techn projects?

What is the impact of leadership on the short and long-term success of knowledge-based alliances?

What leadership incentives and performance measures are associated with the successful projects?

How do risk (known probability), uncertainty (imperfectly known probability), and ambiguity (unknown uncertainty) drive a leader’s decisions as well as project profitability?
Theme 5: Collaboration & Organ Boundaries

How do incentives, goals, and feedback impact collaboration and knowledge transfer when implementing new science & techn?

How does a firm’s ability to manage interdependencies within its organizational boundaries impact the timing of the adoption of new science & techn?

How does a firm’s ability to manage external interdependencies impact the performance of its new science & techn?
Theme 6: Alliances

How do **ambiguity and uncertainty** impact the formation, goals, modes of interaction & roles of alliance partners for new science & techn projects?

What is the impact on an alliance member’s performance when its partner’s **contribution to knowledge is unexpected**?

How does **past experience & trust** impact the nature of alliance contracts and the ultimate performance?

How do **revenue sharing contracts** and the **risk of information leakage** impact alliance performance?
Theme 7: Distance and Project Performance

How is performance within a firm’s new science & technology project or between alliance partners of a project impacted by differences in:

- locations (virtual teams),
- culture,
- hierarchy in organization (power),
- skills/capabilities of workforce.

How should incentives, processes, goals and feedback differ under each of the above?
Theme 8: Micro-level Management

How is a design, development, implementation of new science & techn project divided into tasks (worker assignments) at the outset of the project?

How are the tasks revised from feedback on project status over time?

How does the process of task definition and revision impact employee motivation and project performance?

How does uncertainty in the scope of the project impact design, development, implementation of innovation in science & techn?
Theme 9: Large Established Firm

How should a large established firm set goals, incentives, resource commitments and organizational structure to:

- Drive internal culture for innovation (competing teams?)
- Manage internal & external alliances
- Exploit and leverage opportunities from new techns (crowdsourcing and social networks)
- Understand & nurture the firm’s ecosystem such as the creation of complementary technologies?
- Nurture and derive success from spin offs (spawning) and entrepreneurial ventures
Theme 10: Entrepreneurship

How can **ambiguity and uncertainty** be leveraged to drive entrepreneurial success in exploration?

How is entrepreneurial success driven by a manager’s ability to **overlap exploration and exploitation activities** over time?

How do **incentives for risk taking & risk aversion** impact dynamic pursuit of exploration and exploitation?

How can an entrepreneur leverage **learning from past failure versus success**?

Gaimon & Bailey, *POM*, Nov-Dec 2013 (Joglekar & Levesque)
Conclusion on Behavioral Topics in MOT

Vast opportunities for impactful research.

Broad scope of topics (themes)

Extend existing optimization papers: why actual decisions differ from “optimal”? 
I would like to thank the session chairs for the invitation.

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THANK YOU!

QUESTIONS?