

Scheller College
of Business



Celebrating
100 Years
1912 - 2012

Opportunities in Behavioral Research: Management of Technology

Cheryl Gaimon

MOT Department Editor POM

POMS Conference May 2015

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

ALREADY Published by MOT Dept.

“Roles of Worker Expertise, Information Sharing Quality, & Psychological Safety in Manuf Process Innovation: Intellectual Capital Perspective” Lee, Swink & Pandejpon (*POM* Jul-Aug 2011)

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

“Task Design, Team Context, & Psychological Safety: An Empirical Analysis of R&D Projects in High Techn Organizations,” Chandrasekaran & Mishra (*POM*, Nov-Dec 2012)

- **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.

ALREADY Published by MOT Dept.

“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.

“Effect of Language Differences and National Culture on Operational Process Compliance,” Gray & Massimino (*POM*, Jun 2014)

- ***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.

ALREADY Published by MOT Dept.

“Impact of Info & Commun Techn Implementation on Employees’ Jobs in Service Organizations in India,” Venkatesh, Bala, Sykes (*POM* Sept-Oct 2010)

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

“The Role of Operational Interdependence & Supervisory Experience on Management Assessments of Resource Planning Systems,” Bendoly, Bachrach Powell (*POM* Jan-Feb 2008)

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

ALREADY Published by MOT Dept.

“An Integrated Text Analytic Framework for Product Defect Discovery,” Abrahams, Fan, Wang (*POM* to appear)

- 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.

Research Methods in MOT Dept.

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 & tech 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 & techn 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 techs (**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.**

**I would like to thank the Senior Editors of MOT
(especially Elliot Bendoly, Sarv Devaraj, Manpreet
Hora, Moren Levesque, Karthik Ramachandran)
and a PhD student (Wayne Fu) for their
valuable input on this presentation.**

- **THANK YOU!**

- **QUESTIONS?**