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How to Write for RTM as an IRI Research Group

A Step-by-Step Guide

Crafting an article for a professional, peer-reviewed journal can be a daunting task. This document walks research groups through a step-by-step process for planning, drafting, and publishing professional articles for the official journal of the Innovation Research Interchange (IRI), formally known as the Industrial Research Institute: *Research-Technology Management (RTM).*

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Managing Editor
RTM

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Start from the beginning...

A good *RTM* article begins with a strong study design. The first stage of your work should focus on three outcomes:

1. **A clear statement of the questions you want to answer.** Defining the object of the study as a specific question to be answered provides a concrete, achievable goal and will give shape to the final product. Broader goals—the ones that piqued your interest or led to the creation of the IRI Research working group—are important, but they're usually too broad to be useful in designing a study.

2. **A clear statement of the hypotheses you're working from.** Defining the hypothesis—the answer you think you'll find—will help surface assumptions that, if left implicit, can shape the data collection and analysis—and the resulting paper—in ways that can be counterproductive and that are very difficult to capture and support post hoc.

3. **A strong, proactive study design to answer those questions and interrogate those hypotheses**. A good study design should help you address the core questions without allowing the hypotheses to bias the analysis. The study design should include a concrete data collection and analysis plan.

This early work should also include a consideration of whether an *RTM* article is the right deliverable given the contours and context of the project. If your project is very large, open-ended, or speculative, the typical peer-reviewed feature article may not be the best venue for its presentation. If your goal is not an evidence-based argument about the effectiveness (or otherwise) of a

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particular set of practices or conceptual approach, a feature article may or may not be the best fit for you.

That said, we are anxious to showcase IRI Research in *RTM* and the feature article is not the only way to do that (**See: Appendix I**). Our other departments, such as Resources, Research Notes, or Point of View, may offer a better outlet, particularly for very early-stage work or work that consists primarily of a literature review.

If you have a proposal beyond the scope of the typical feature article, contact us! We are quite open to ideas for different ways to present your work in the journal, as long as they are consonant with our mission and platform. But our issue planning runs a year or more out, and we need time to figure out whether your proposal makes sense for the journal and how we can accommodate it. If, ultimately, *RTM* is not the right outlet, you can then explore other options with IRI staff and the IRI Research leadership.

On the other hand, deciding early on that an *RTM* article is your preferred final product can help you establish processes to spread the work out and ease the article production process. For instance, although the study design process is iterative and some elements will likely change over time, a full narration of the study design at this first stage can provide a first draft of, for instance, the methodology section for your *RTM* paper. Similarly, knowing you're working toward an *RTM* article may change your approach to the literature survey.

One of the key elements of your study design is the data. Identify the kinds of data you will need to answer your questions and address your hypotheses. Work backward from your question to figure out what kind of raw data you will need to build an evidence-based argument for an answer. Then, decide how you'll collect that data—literature review? Interviews? Surveys? Existing data sets? Most projects will use a combination of data sources. Although *RTM* staff does not

have sufficient expertise in study design to provide assistance at this stage, our experience does suggest some considerations:

- Almost all *RTM* articles include at least a cursory literature review that grounds the project in existing knowledge, as well as one or more primary data sources. Some groups do this at the end of the process, as part of producing the paper, but doing the literature survey early can alert you to potential overlaps with your work plan, help you identify knowledge gaps that the IRI Research can fill, perhaps with just a slight adjustment in the project's goals, and provide inspiration in shaping questions, hypotheses, and data plans.

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- If your plan includes interviews or surveys, make sure your team includes someone with expertise in designing survey instruments or interview question sets, or reach out for external help. Survey and question design can seem simple, but it is a complex field. Designing a question set that elicits the information you need without embedding bias requires both expertise and great care.

- If your plan includes interviews, round-table discussions, or other open discussion techniques, decide up front how you'll collect, document, and handle that data. Designated note takers should be calibrated, so everyone's collecting the same kind of data in the same format. In most instances, note takers should be supplemented by recording, so you can go back and capture specific data points, to clarify notes, resolve disagreements, or collect participant quotations for presentation.

- Decide up front how you'll analyze data. What techniques will you use? Do you have the appropriate expertise on your team? If not, consider inviting external experts to speak at one of your sessions, to provide training in the methods you intend to use. If your data set includes quantitative data,

make sure you have the appropriate support for statistical analysis available to the team.

Taking these points into account early in the project will help ensure you have a solid base of data and a clear story to tell when it's time to write up your article.

CRAFTING THE ARTICLE

RTM is the flagship publication of the Innovation Research Interchange (IRI), and the longest-running journal in the field of innovation and technology management. In our sixty years of publication, we've been known for breaking new ground—introducing to the world paradigm-shifting concepts such as open innovation, disruptive innovation, and Stage-Gate NPD pipelines. Your IRI Research working group paper represents a substantial commitment to that tradition of practice-focused excellence.

You can begin your journey toward publication by reviewing the resources we provide:

- Our author guidelines
- A PowerPoint presentation on the basics of writing for *RTM.*
- Previously published articles, especially IRI Research articles, but also non-IRI work on your topic or related issues.

What follows does not repeat the information found in those sources. Rather, we offer some tips to help ease your composition process.

Basic Structure

Our PowerPoint presentation gives a good summary of the basic structure of the typical *RTM* feature article:

- *Introduction*—Short discussion to establish relevance/urgency, orient readers, and motivate them to continue reading.
- *Background*—Literature survey, crafted to provide the context readers need to follow the argument in the rest of the paper and highlight this study's unique contribution to existing knowledge.

- *Study Methodology/Case Background*—Overview of the data collection and analysis process and basic information about the study population.
- *Findings*—The results of the data analysis, in sufficient detail to support discussions to follow.
- *Implications/Applications/Lessons Learned*—Synthesis of background, data, and findings to argue for clear conclusions, highlight managerial implications and applications of the work, and suggest how findings may be broadly applicable beyond specific study population.
- *Conclusion*—The parting shot, a last chance to highlight key findings and argue for the broad relevance of the work.

Note that, except for the introduction (which does not have a heading) and the Conclusion (every *RTM* article has a Conclusion), these sections do not have to bear these titles. In fact, we prefer descriptive headings that lead readers through your argument rather than generic headings that merely provide signposts.

On a similar note, avoid a "roadmap" approach to the introduction and to transitions between sections. By this, we mean paragraphs that describe what each section does. (Avoid phrases such as "This paper will . . ." or "In the next section, we will . . .") We prefer substantive paragraphs that summarize and preview the argument to follow. In other words, rather than giving readers directions, describe the landscape they'll be navigating. This is one area where scanning a few recent articles, to see how introductions are structured, can be very helpful.

The same applies to conclusions—don't merely summarize what readers have just read. Instead, highlight the strongest findings and use them to suggest why your work is important and what readers should do with it. Leave readers with a sense of the significance of the work, or—in the best cases—a sense of excitement about how they can apply this new knowledge in their own organizations.

Create a Narrative

Our most successful papers create a narrative of some kind, leading readers from the foundational question to an answer (even if that answer is equivocal). That answer must be shown to emerge from the data you collected. The narrative may be quite straightforward, leading directly from question to analysis to findings that support a clear conclusion. Or—particularly if your data didn't deliver the conclusions you expected or even failed to deliver a clear conclusion at all—it may be a bit twistier. Negative data, or even null data, is as important and informative as positive findings, though constructing those narratives can be more challenging.

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Keeping a few key considerations in mind can help you construct a clear, strong narrative thread:

Keep the focus on the main point. Don't lose sight of the focus of your article, and don't allow readers to either. The literature survey, for instance, need not be exhaustive in the way some other journals may require—you don't need to define basic terms or namecheck every major publication on a topic. Instead, focus the discussion on the information readers really need to 1) assess the originality and importance of your contribution, 2) get a feel for the context of your work, including its theoretical and conceptual foundations, and 3) understand any specialized terminology (or the particular usage your team may be making of common or ill-defined terms) or concepts that are important to your argument later in the paper. Our readers don't need open innovation defined for them again, for example, unless Henry Chesbrough's work is specifically important to yours.

Present your data. Your most powerful evidence is the data you collected, whether that's quantitative survey data subjected to statistical analysis, qualitative interview data, or case study data. Don't skip it or make readers guess

what you have. Present your data—give an overview of your findings first, highlighting the most important results, and then deploy the details of those findings as evidence to support your discussion of implications and conclusions.

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This means more than just referring vaguely to "our findings indicate." Cite specific pieces of data, offer quotations from interviews, point to particular case-study outcomes. Don't *tell* readers that your data support your conclusions; *show* them how the data lead to your conclusions.

Don't skip steps. Beginning with the introduction, lead readers from background to data to conclusions. Make sure all the parts connect—the background makes clear both the motivation for the question and the usefulness of answering it, and provides any special terminology or theoretical frameworks readers will need to fully understand your analysis and implications. The methodology presentation focuses on those elements readers need to gauge the validity of your findings. And the discussion of findings focuses on those elements needed to support your implications.

Keep everything in order. In a good story, the beginning generally comes at the start, the complications all happen in the middle, and the resolution is at the end. This rule is frequently broken, of course, sometimes with very compelling results. But that generally won't work in a research article. Don't present results before you present your study. Finish the literature review before launching into your original work. You'll need to allude to your findings in the Introduction, of course, but don't do so in a way that preempts the presentation of your study.

Don't cross the streams. On a related note, keep the separate sections separate. Don't conflate the literature survey with your report of your findings (although you may include references in the findings, of course, to buttress key arguments or suggest how your findings fit with existing knowledge). Don't interweave methodology with the presentation of data. This kind of structure can leave

readers confused about how you arrived at your findings or, worse, about which findings are yours and which are someone else's.

Use ancillary elements to support the narrative, but don't let them replace it. Tables, figures, and text boxes should support your text, not stand in for it. Don't put information that is central to your argument in text boxes, and don't insert a table instead of a discussion. Rather, the text box is used to provide information that may be interesting to some readers but isn't central to the text and tables and figures should illustrate a discussion that points to their most important elements or summarizes the detailed data they present. Main text and ancillary elements are interdependent: The manuscript should make sense even if its tables and figures are removed. Conversely, the design of figures and tables should give the scanning reader a quick hit of insight about the article, drawing attention to key points.

Finally, don't claim more than you can prove. Don't be shy about arguing for the importance of your

> Don't be shy about arguing for the importance of your work, but don't get ahead of yourself. Avoid over-generalizations

work, but don't get ahead of yourself. Avoid over-generalizations, which can test readers' patience and undermine your credibility. For instance, you can't claim to have conclusively identified "best practices" based on one, three, or even five case studies. You can say that you've looked at leaders in the field and identified some common practices that suggest some factors in success.

AFTER YOU SUBMIT

Once you submit your paper, using Editorial Manager and the process outlined in our author guidelines, one of two things will happen:

- We'll return it to you for a quick revision based on what we know peer reviewers will want. We do this when we think that addressing some clear issues up front will ease the paper's path through peer review and help speed it to publication. Clearing up these things before review will ensure you get useful responses from peer reviewers.

- We'll send the paper to peer review. At this point, four to six reviewers, most of them working or recently retired R&D leaders, will evaluate your article for content and form and offer substantive feedback.

When your article returns from peer review, a process that typically takes two to three months, *RTM*'s editorial staff will then collate that feedback into a set of guidance for revision and return it to you along with clear instructions for the next steps.

Once an article has been revised, it may go back to peer reviewers (if substantive content changes were required) or it will go into editing. Once a paper has passed peer review, and been revised, it will undergo substantive editing by editorial staff, in cooperation with you.

This process can take time, and we understand that it can be frustrating. But our goal is the same as yours—to make sure your article is the best showcase of your work it possibly can be.

A FEW FINAL TIPS

Finally, here are a few quick dos and don'ts to ease your journey through the submission process.

Do read the author guidelines carefully prior to submitting. They offer detailed formatting requirements, as well as instructions for submitting. Pay particular attention to the requirements for anonymization and the limits with regard to length. Note that figures should not be separated from the manuscript in the first submission.

Do think carefully about who gets author credit on your paper. *RTM* follows the guidelines provided by the International Committee of Medical Journal Editors (ICMJE) in determining authorship. Those guidelines define four criteria every participant must meet to be considered an author:

- Substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work; AND
- Drafting the work or revising it critically for important intellectual content; AND
- Final approval of the version to be published; AND
- Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

Key participants who do not meet these criteria can be recognized in other ways, for instance in an acknowledgment.

Don't use published material without permission, including figures. Short quotations, as long as they are properly cited, are covered by the Fair Use exception to copyright law, but that protection does not extend to entire figures. *RTM* policy, like that of most other journals, is that authors are responsible for acquiring necessary permissions.

Do pay attention to figure quality and design. We won't be able to use screen captures in print production, for instance. And although our online version will reproduce images in color, the print edition appears in black and white, so any use of color must take both venues into account. On a similar note, very small text will be illegible on the page; don't use text in figures that's smaller than 12 point, and always use a sans serif font, such as Arial or Helvetica.

Do get in touch with *RTM*'s editorial staff, IRI staff, or the IRI Research leadership if you have questions at any stage. The best way to make initial contact with *RTM* is via email to MaryAnne Gobble, *RTM*'s Managing Editor, at gobble@iriweb.org. If you would like to discuss IRI Research with the IRI staff, contact Lee Green, VP, Knowledge Creation, at green@iriweb.org.

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Appendix I

Non-feature article options in *RTM*

Below is a list of available options for publishing articles in *RTM* that are not considered features.

Point of View

Articles that appear in the *Point of View* column offer fully-supported and convincingly argued *opinions* about key issues in R&D and innovation. Most *Point of View* articles are quite short, generally running about 1,500–2,500 words. *RTM* will occasionally publish longer entries by recognized thought leaders making complex or particularly provocative arguments. *RTM* has also had successful submissions intended to attract attention to an issue or area the author feels is ignored or that is emerging rapidly.

Point of View pieces do not go through peer review; rather, they are assessed by the Editor-in-Chief and Managing Editor, who decide whether to proceed to publication and offer advice on revision. They do go through the same editing process feature articles receive, though the shorter length and narrower focus mean it is generally quicker.

As an example of using *Point of View* articles from IRI Research groups, it is possible the group could arrive at a conclusion/argument via panels and focus groups or desk research. They could then present the argument they arrive at, supported by data from the work (and, probably, a few citations).

Research Notes

Research Notes articles were specifically included in *RTM* with the intention of helping IRI Research groups publish some of their interesting findings. Items in this department are limited to 2,500 words in body text, but may include text boxes, figures, tables, and should include references. *Research Notes* is intended for concrete outputs that are preliminary or not up to the level of a full feature article; the groups that have used it have generally used it to publish outtakes from bigger projects or early results (such as comprehensive literature reviews for fields that are not widely known yet) that later produce full articles. That said, *RTM* could also see the use of such articles working as a primary product for a smaller-scale project or a project whose literature review reveals that the work they planned to do had already been done.

Research Notes articles go through an abbreviated peer review process (2 reviewers plus editors, rather than 4–6) along with the usual editing.

An "interim product" could include a literature review, foundational work, or even a short article based on interviews or other qualitative data not amenable to (or not executed in a way that allows) more extensive analysis.

It could also work for a conceptual product, such as a maturity model, that's based in literature but doesn't have the validation or basis in empirical data *RTM* would usually look for in a feature article, or for something like a taxonomy. This could be an outlet for an awful lot of work that deserves dissemination because it could offer a basis for further exploration by other researchers, but isn't quite fully developed enough to withstand peer review or merit a feature.

Resources

Resources is the column usually set aside for the *RTM* Managing Editor, but is gladly surrendered to a group with a good, solid topic and set of resources to offer. Basically, it is a quick primer on some topic in the field that's attracting active discussion, generally 1,200–1,500 words. Often, *RTM* goes for topics that have some controversy around them, just to keep it interesting, but it could work for just about anything. As an example, *RTM* had an article in 2016 on how to work with federal labs that was converted to a *Resources* article because *RTM* wanted the information published, but it wasn't original research. In essence, it's a beefed up literature review, a kind of conversational bibliography. This is not the place to introduce anything new. Anyone wanting to aim for *Resources* should read a couple of them and talk to the *RTM* Managing Editor first, to make sure they have the focus right.

Perspectives

Perspectives is *RTM's* news analysis section, so items here have some current events focus (with "current events" fairly broadly defined—we cover trends as well as actual happenings) with an overlay of analysis relevant to *RTM* readers. *Perspectives* stories run 1,200–1,500 words and generally do not include images, tables, or references. They're written like news stories, with journalistic tone and treatment of sources. Anyone thinking about this should talk to *RTM's* Managing Editor first.