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On Writing Research Articles Well: A Guide for Writing IS Papers

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Abstract

Writing well is not often taught in PhD programs. Rather, it is usually learned via trial and error. The goal of this editorial is to reduce trial-and-error frustration by providing guidelines for crafting information systems (IS) research papers. I start by discussing and proposing guidelines for writing IS theory papers, drawing heavily from a recent experience writing an IS theory paper (Baird & Maruping, 2021). I then extend the guidelines provided to writing empirical IS papers. Numerous tips are provided throughout. Paper planning worksheets and outlines are available in the appendices.

Keywords: Writing, Academic Papers, Theory, Manuscript, Tips, Worksheets, Outlines

Dorothy E. Leidner was the accepting senior editor. This editorial was submitted on June 9, 2021 and underwent one revision.

1 Introduction

Your published article should be enjoyable to read. It should also change what readers know by the time they finish (Hollenbeck, 2008) without being cognitively taxing. To accomplish these goals, there are two particularly useful analogies to visualize: the red thread (Savage & Yeh, 2019)¹ and the hourglass (Cals & Kotz, 2013; Schulte, 2003). The *red thread* means that your article follows a focused and continuously connected set of ideas from start to finish. Your logical arguments should not fray, to avoid confusing the reader. The *hourglass* means your article starts broad (i.e., with what your target audience knows well), then narrows (i.e., specifics of what you did and why), and finally broadens again (i.e., application, generalizations, and opportunities).

How does one apply these analogies toward writing an information systems (IS) theory paper well? How should one write other types of IS papers that rely on theoretical arguments well, including empirical

papers? These are the questions addressed in this editorial. This editorial specifically focuses on the *how* of writing IS papers. I assume you will reference other sources for grammar, sentence structure, and related guidelines (e.g., Strunk & White, 2007; Zinsser, 2006).

New theorizing pushes boundaries, expands frontiers, and breaks with tradition. As such, IS theory and theory-based papers, which includes empirical papers, are notoriously difficult to write. Breaking with tradition means that underlying assumptions, previously taken for granted, must now be revisited. For instance, the assumption that end-users are always the primary agents in human-IS artifact dyads no longer always holds. Agentic IS artifacts now often possess the capability to direct human agents (users), such as a routing agent instructing a delivery driver which stop to go to next (Baird & Maruping, 2021). If human agent primacy is no longer a safe assumption, we risk not understanding the complexity of underlying phenomena if this assumption is not challenged. Thus, existing theory must often be

¹ See also: <https://tu-dresden.de/karriere/weiterbildung/ressourcen/dateien/schreibzentrum/handouts/englische->

[handouts/04_rohfassung-schreiben/Method_Red-Thread.pdf?lang=en](#)

modified or replaced as underlying phenomena evolve. However, this process is replete with potential pitfalls for theorists and writers. Therefore, I seek to help theorists and academic writers recognize and proactively address challenges.

My suggestions are not entirely new. Much has been written about how to write theory and theory-based papers (e.g., Barney, 2018; Burton-Jones et al., 2015; Byron & Thatcher, 2016; Gregor, 2006; Rivard, 2014, 2020). From these and related works, we know that the introduction must be organized and communicated effectively (Barney, 2018; Rai, 2018), that the theory building process needs to be both systematic and creative (Rivard, 2014, 2020; Weick, 1989), that the choice of theory type must be explicit (Burton-Jones et al., 2015; Gregor, 2006; Jaccard & Jacoby, 2019), that exercises such as visual representations and short, written summaries can help to formulate and consolidate ideas (Byron & Thatcher, 2016), and that contribution is elusive but vital (Alvesson & Sandberg, 2011; Leidner, 2020; Locke & Golden-Biddle, 1997). Yet, even though I have read these papers and more (e.g., Gewin, 2018; Lange & Pfarrer, 2017; Silvia, 2007; Smithey Fulmer, 2012), I have found the IS manuscript writing process to still be a struggle. In retrospect, I realize that while the advice from the sources cited above is excellent, it spans different journals, styles, and disciplines. This fragmentation of suggestions creates confusion in regard to which approaches best apply to the construction of IS papers.

To resolve this tension, I conducted a retrospective analysis of the theorizing process we went through in developing the agentic IS artifact delegation theoretical framework (Baird & Maruping, 2021). I also reflected back on a variety of experiences working on other articles, including empirical work. Through this process, I derived three overarching goals for this editorial: (1) provide a consolidated set of guidelines for structuring and writing IS theory papers, (2) explain how working on a theory paper with Dr. Maruping (Baird & Maruping, 2021) helped me to develop the proposed guidelines for writing IS theory papers, and (3) generalize the guidelines proposed to writing empirical IS papers. These goals form the structure of the remainder of this paper.

2 A Simple Guide for Writing IS Theory Papers

In my view, an IS theory paper should ultimately communicate five things: (1) area of theoretical focus, (2) relevant background, (3) theoretical tension, (4) resolution of theoretical tension (i.e., explanation and support of the new theory or theorizing approach), and (5) guidelines for the application of the new theory or theorizing. Table 1 has more details about each of these five items. Details about how I arrived at these guidelines are discussed in the next section.

Generalization of these guidelines to empirical IS papers are offered in a later section.

While papers will vary in exactly how each of these guidelines is addressed, a good starting point in your own writing is to draft a couple of sentences for each of the areas described in Table 1. I recommend using the worksheet in Appendix A (“Planning Worksheet for an IS Theory Paper”) to structure this brainstorming and planning process. Then, I suggest expanding these notes to an outline of the manuscript (see Appendix B: “IS Theory Paper Initial Outline”). I quickly note that the five areas suggested here do not always map perfectly to the major sections you will write in your manuscript. For instance, tensions will typically be discussed in the Introduction and Background sections, rather than being in their own section. Further, resolutions of the theoretical tensions will end up being separated out into a couple of sections (i.e., Theory Building Approach and New Theory Development—see Appendix B). Thus, the five areas suggest here provide a good structure for an Introduction as well as a general guide for the rest of the paper, but when you follow the outline suggested (Appendix B), note differences in how the paper is typically organized and structured.

Once you have an outline, I suggest *writing from the middle out*, at least for the first draft. Work through drafting (or bulleting and then drafting) the Background, Theory Building Approach, and New Theory Development, first. Then, draft the Guidelines, the Conclusion, the Abstract, and the Introduction last. The Introduction is typically the most difficult section to write of any paper, is also the most read, and is often easier to write later in the writing process. If you prefer to write a quick draft of the Introduction first to act as a guide, that also makes sense, but I suggest saving the work on more complete versions for later in the process.

3 Theorizing Process for Baird and Maruping (2021)

How did I develop these guidelines? A significant learning experience was working on a theory paper with Dr. Maruping (Baird & Maruping, 2021). In this section, I discuss how we developed this theory paper, what we learned from this experience, and how these lessons translate into guidance provided above for writing theory papers in the IS discipline. Then, in the next section, I generalize these lessons to writing other kinds of IS papers, including empirical papers.

Our theorizing process was in a word, *iterative*. We individually iterated through cycles of reading articles, developing ideas, rereading, and rethinking. We jointly iterated through outlines, tables, figures, drafts, presentations, and feedback.

Table 1. Items an IS Theory Paper Should Communicate

| | |
|--|--|
| Area of theoretical Focus | <ul style="list-style-type: none"> • Identify a target audience (i.e., subcommunity of the IS discipline) • Explain why this audience will find this topic helpful and interesting |
| Relevant background | <ul style="list-style-type: none"> • What is the common ground relevant to your target audience? • To move a reader from what they know to what they should know, start with the current consensus or a summary of what is already known (Barney, 2018; Rai, 2018). |
| Theoretical tension | <ul style="list-style-type: none"> • Explain why new theory is needed. • Two methods have been highlighted for accomplishing this task: (1) gap spotting (i.e., what is missing?), and (2) assumption challenging (i.e., which current assumptions need to be revisited?) (Alvesson & Sandberg, 2011). Of the two, I and others (Chatterjee & Davison, 2020) highly recommend focusing first and primarily on <i>assumption challenging</i>. One of the best ways to do this is to <i>look for heterogeneity where homogeneity is assumed</i>. |
| Resolution of theoretical tension | <ul style="list-style-type: none"> • How is this theorizing going to resolve the tension you have identified? • What is the specific objective of your theorizing efforts? • What theory building (or extending) approach will be applied? • What are the conditions under which you develop (or extend) theory? |
| Guidelines for application | <ul style="list-style-type: none"> • What steps should future researchers go through when applying this work? • What future research questions could this theory be applied to? • How could this work be extended? |

For example, I commute to Georgia State University (GSU) by light-rail train. My reading process was to print a couple of hopefully relevant papers every day, read those papers on the train on the way home, reread or scan through them again on my way in in the morning, and then write up a brief synthesis of the most relevant points when I was in the office. Then, I would search for additional articles, often cited by or that cited the articles I just read, print again, and start again. In a matter of weeks and months, my stack of printed articles grew considerably; my notes became extremely valuable in the ideation stages.²

This reading and synthesis process provided an essential foundation for brainstorming, as new ideas must be anchored in what we already know. A particular challenge, though, was determining what would be different enough to justify new theorizing. We knew we needed to problematize (Alvesson & Sandberg, 2011; Locke & Golden-Biddle, 1997), and we had many ideas. Many of these ideas, however, seemed either too incremental or not sufficiently grounded in the existing IS literature. Agency, IS artifacts, delegation, and many other closely related concepts including collaboration, automation, sociomateriality, actor networks, and more had already been thoroughly theorized and frequently discussed (e.g., Baskerville et al., 2019; Bendor et al., 2001; Castelfranchi & Falcone, 1998; Holmstrom, 1980; Rai

et al., 2019). Thus, it was difficult to determine what might be new enough, while also being sufficiently grounded in the literature.

It took us a while to recognize what Erik Brynjolfsson and Andrew McAfee pointed out in their book, *The Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant Technologies* (Brynjolfsson & McAfee, 2014), about digital innovation. They argued in part that unique *combinations* of existing innovations, coupled with new ways of applying and using such combinatorial approaches, result in exponential digital growth. Therefore, new ideas are not always entirely new from the ground up. Rather, theoretical innovation almost always comes from *unique combinations* of existing theory, concepts, constructs, contemporary IS artifact designs, and observations. I return to this point later but, in regard to process, we learned to first identify existing components (e.g., theory bases, concepts, constructs, etc.), knowing that the components themselves were not our innovations. The innovation followed when we did two things: (1) identified assumptions in prior literature that needed to be revisited, and (2) combined and connected known ideas in new ways (e.g., foregrounding delegation between human agents and agentic IS artifacts).

We also looked beyond IS research and business school journals for inspiration. Sources such as *The*

² Yes, I need to purchase a tablet.

New Yorker, *MIT Technology Review*, *Nature*, *Science*, and even snippets from articles quoted or referred to on social media sites were essential. Finding examples of how contemporary IS artifacts were different was essential. In our case, was it that such artifacts could take advantage of more connectivity, storage, and sensing than ever before? Or was it that something more fundamental was changing? That something more fundamental for our work was that IS artifacts can now accept delegated tasks and outcome responsibilities in much more uncertain and unconstrained situations than in the past, and even delegate to humans.

Given this background, I step back for a minute to describe the submission and review-process steps we went through. Our theory paper actually started as an Issue and Opinions paper submitted to *MIS Quarterly*. The reviewers and editors thought our ideas of how agency could uniquely be applied to IS artifacts were interesting, as well as our use of Bandura's view of agency through the lens of social cognitive theory (Bandura, 2001, 2006), but thought we needed more. At that time, we had not yet paired agency with delegation and had not drawn sufficiently from the many literatures that contribute to our understanding of this pairing. We had also drawn from one view of agency, that of Bandura (Bandura, 2001, 2006), and had not fully integrated other views of agency or even other views of agency from the IS perspective. The reviewers also thought that the paper would likely be better as a Theory and Review paper, as opposed to an Issues and Opinions paper, in part due to the additional depth that would likely be required to be successful. Fortunately, the *MIS Quarterly* Next-Generation Information Systems Theories Special Issue was announced around that time.

The special issue suggested an abstract submission, which we did, followed by a workshop at the International Conference on Information Systems (ICIS) in San Francisco. The feedback received at the workshop was excellent and significantly helped us to formulate our first, full draft. I cannot emphasize enough how much the feedback of others, both from the review team and the workshops, helped us to refine our ideas. Ultimately, we went through additional rounds of review, received feedback from GSU faculty from a presentation given locally and from the participants of the special issue workshop at the University of Maryland, and received significant and much appreciated feedback from reviewers and editors.

While it would be too tedious to summarize feedback received from each of the above presentations, workshops, and rounds of review, I thought a synthesis might be helpful. Therefore, below is a synthesis of the questions that reviewers and participants often asked.

3.1 Who? What?

Who are you speaking to? What is your message to this target audience? It is difficult to communicate with the entire IS community at once. A senior editor (SE) told us this in the first round of review. Rather than developing theory that would appeal to the entire IS community, the SE suggested targeting a specific subcommunity. In our case, that ended up being the IS use subcommunity, but could have been the human computer interaction (HCI) subcommunity, the sociomateriality subcommunity, or any number of other subcommunities. The challenge was picking one. In the end, the "right one" ended up being the subcommunity: (1) that had the most relevant theory base to draw from (i.e., the traditions of this subcommunity were the traditions we wanted to both build upon and challenge), and (2) that we believed would be most impacted by and receptive to our theorizing.

Secondly, we had to formulate a message tailored to this subcommunity. We learned quickly that targeting a specific subcommunity made crafting a tailored message much easier. We could now more easily: (1) identify the primary assumptions underlying the theory for that subcommunity, which is also a way of describing what is already known by this subcommunity, and (2) discuss which of those assumptions would be revisited in our work. It is important to note that we did not argue that the entire IS use theory base be thrown out. Many of the existing assumptions and known relationships would not be challenged. Rather, we suggested that *some* of the existing assumptions needed to be revisited (i.e., primacy of human agents, unit of analysis at the individual end-user level, backgrounding of delegation) under specific conditions. This led to our primary thesis statement (aka objective):

In this research, we explicitly acknowledge the increasingly agentic nature of IS artifacts, focus on the dyadic unit of analysis, and introduce delegation—transferring rights and responsibilities for task execution and outcomes to another—as a foundational and powerful lens through which to explain human-agentic IS artifact relationships (Baird & Maruping, 2021, p. 317).

3.2 Why?

We heard variations of this question several times. Why focus on IS use? Why an agent-based perspective? Why pick a framework and not an explanatory model? Why a delegation and not collaboration or some other term? Why is this sufficiently new? One of the things we learned was to explain the choices we faced and our reasoning. Trade-offs are inherent in any theorizing process but the

reader may not immediately recognize which trade-offs were faced. While we did not explain every decision or choice made, as that would have resulted in an excessively long paper, the suggestion to highlight choices faced at major decision-making points proved to be particularly valuable.

For example, rather than just tell the reader which subcommunity we chose, we explained why the IS use theory base was applicable and in need of new theorizing. We argued that *not* engaging in new IS use theory building would move the field backward, as the world of IS artifacts is changing but our theorizing was not.

We also explained why we chose to develop a theoretical framework and not an explanatory model. We argued that a framework provides a scaffolding for many future explanatory models. We also argued, as a counterfactual of sorts, that we could have instead focused on one explanatory model. However, such an approach would be constraining in our case, as agentic IS artifacts and delegation cannot be entirely explained by one model. In fact, this constraint is similar to the constraints of prior explanatory models that only focus on one perspective (e.g., the human agent perspective in IS use, Venkatesh et al., 2003). While such constraints are often necessary in empirical work, when theorizing in a new area, we believed that a framework would be more productive. Explicit explanation of our reasoning helped readers and reviewers understand why, out of many possible ways to develop theory, we picked one.

3.3 When? Where?

When and where does your theory or theorizing apply? When and where would it *not* apply? These are the boundary condition (Busse et al., 2017) questions. Theory and theory-based papers are not only difficult to write but they are also difficult to review. This is because of what was discussed earlier: a good theory or theory-based paper follows some traditions but explicitly challenges others. The reviewer must then determine what criteria to apply to a determination of whether or not the theorizing is appropriate and the contribution sufficient (Corley & Gioia, 2011; Whetten, 1989). One such criterion is when and where the new theory applies or does not apply, which must be explicitly addressed by the author(s) of the theory paper.

We found that the easiest way to identify boundary conditions was to use the assumptions being challenged as the basis. In our case, if the primary assumption being challenged was human primacy in the human-IS artifact dyad, then our theorizing would apply to cases when the IS artifact itself can be the primary agent (i.e., be “agentic” in our proposed parlance). If another assumption was that the individual (user) level of analysis is insufficient, a

different unit of analysis must then be applied. Many units of analysis could apply (e.g., dyadic or collective). We chose the dyadic unit of analysis and also explained why. Finally, if delegation has been implicit (backgrounded) in prior models and theorizing, then our theory would apply in cases where delegation could be foregrounded (i.e., cases where rights and responsibilities can be distributed between human agents and agentic IS artifacts).

While this is a relatively straightforward way to address boundary conditions, I note that the boundary conditions chosen must still be explained. Going back to the “why,” just stating that boundary conditions apply is insufficient. It may appear obvious to the authors when and where the theory applies or does not apply, but it will not be as obvious to the reader. Authors must explain which boundary conditions are primary, as this establishes clear criteria for evaluation of your work, as well as a basis for others to know when it should and should not be leveraged.

3.4 How?

How should this framework (or theory or theorizing) be applied? This was a valuable lesson. Theory, especially in an applied discipline such as ours, must be applicable to real-world phenomena and must be able to be applied by future researchers. Therefore, authors must make explicit how the theory (or theorizing) should be applied to researching real-world phenomena. In our first submission, our paper essentially ended after the presentation of our theoretical framework and some additional discussion. However, the SEs raised an important question: If a doctoral student read this paper and wanted to develop one or more dissertation papers based on this work, how would this student proceed? The specific suggestion that followed, which was excellent, was to write a “Guidelines” section that: (1) provided a list of specific guidelines for developing models derived from the proposed framework, and (2) provided an example or two of how the guidelines could be applied. The result was a detailed section that did exactly that. And, interestingly, as we wrote the section, we made some minor changes to our framework that we thought would improve application, resulting in a better framework.

Further, how does one systematically identify opportunities for future research? We initially made the mistake of providing a laundry list of possible future research questions without explicitly connecting future research opportunities back to specific aspects of our framework. A more systematic approach, eventually completed after receiving feedback, was providing research opportunities directly related to the guidelines mentioned above. For instance, the guidelines we developed recommend identifying the agents in the dyad (i.e., what type of human agent and what type of agentic

IS artifact), but that also means that other agents are not being considered. Therefore, going back to the above points, remember that every choice made means that other options are discarded. These “discarded options” make for excellent future research opportunities. In this case, a future opportunity would be to challenge our own assumptions, such as the dyadic unit of analysis, and consider broader units of analysis, such as triadic, collective, platform, and even firm or interorganizational levels where applicable and relevant.

4 Generalized Guidelines for Writing IS Papers

I believe the guidelines for writing theory papers can be generalized to other types of theory-based IS papers, including empirical papers. A step-by-step process is now discussed for writing IS papers in general.

4.1 Step 1: Identify and Clarify Your Core Message

As discussed earlier, all academic papers must have a clear and succinct message (a “red thread”) that moves from consensus, to answering your research question(s), to generalizability (an “hourglass”). This message and logical structure are typically built and communicated in five areas (below), which are similar to those presented earlier for theory papers. If you are successful at succinctly convincing the reader of the importance of these five areas, you have succeeded. Therefore, I recommend using the worksheet in Appendix C (“Planning Worksheet for Empirical IS Papers”) to draft and refine your core message, as communicated using these five areas. Some initial suggestions for each area are as follows:

1. **Area of Focus:** Start by describing the context of the paper in a way your target audience would find interesting. You are also telling the reader what aspects of their knowledge base (i.e., their mental model) to relate this paper to.
2. **Background:** Draw from literature relevant to the *audience you are targeting*. You are not speaking to all researchers but rather a specific subset. This is where you define that subset and demonstrate the common ground you have with this subcommunity. Also, use “string” citations, which is a tip I learned at an Academy of Management annual conference from Dr. Nir Menachemi. This means that you should cite multiple sources in lists i.e., we know a lot about X (citations), Y (citations), and Z (citations). You can say a lot with this approach without writing a lot.
3. **Tension:** *This is the most important section of the entire paper.* Make sure readers get the feeling that the tension identified is *worth solving* and that

they *must* read this paper to understand how to resolve this problem.

4. **Resolution:** Succinctly explain your objective, your theory base, and the highlights of your research design and methods. You are describing what you did to resolve the identified tension. Your approach, however, is highly dependent on the audience or community you are targeting. Make sure to cater to their standard style of presenting this information.
5. **Contribution:** *This is the second most important section of the entire paper.* Is your contribution *worth reading* an entire paper? Briefly describe how you move the conversation or consensus forward.

I quickly note that these five areas map well to a five-paragraph Introduction, or first draft or outline of an Introduction, but do not map exactly to the headings for the rest of the paper. This is a little confusing, but some of the sections end up being combined (e.g., “Background” and “Tension” are usually written up in one section) and others, e.g., “Resolution,” actually end up being multiple sections (e.g., “Methods” and “Results”). Therefore, while I wish the way that Introductions are written mapped exactly to the structure of the rest of the paper, a perfect mapping rarely occurs. Thus, I suggest using the worksheets and outline suggested to structure your thoughts and initial outline, while realizing that changes to the structure are welcome as long as such changes will not confuse a reader.

4.2 Step 2: Draft the Outline of Your Future Manuscript

As you layout your manuscript, Appendix D provides a guide. I also highly recommend determining the requirements of your (first) journal of choice at the outset of your writing process. Lay out your initial outline using the journal’s required formatting for headers, subheaders, references, etc. Also include brief notes about limitations per section (e.g., word limit for the abstract, etc.), which of course will be removed later. Your outline will end up looking like an early version of your manuscript to be submitted to your first journal of choice.

4.3 Step 3: Outline the Introduction

Within the Introduction section, create one bullet or label for each of the five areas (Area of Focus, Background, Tension, Resolution, and Contribution). These will eventually each become one paragraph, for a five paragraph Introduction. For now, drawing from the worksheet you completed, add two or three sub-bullets or short sentences with more detail about what you want to communicate in the Introduction in each of the five, primary areas.

4.4 Step 4: Create a Literature Review Synthesis Table in the Background Section

This table will be a synthesis of the background literature you draw from or expand upon. You might or might not keep this table in the final version of the paper. Understand that it can be removed later. However, in the first draft, this is a valuable exercise to help you synthesize relevant literature. One good way to start is to create a list of articles, often in a spreadsheet or table, and then code or tag the articles with ideas for potential themes, clusters, or research areas (all of these terms mean the same thing, in this case). After iterating and deciding which research area labels best represent the set of articles you want to thematically summarize, create a literature synthesis table. This table, or multiple tables if multiple research streams need to be referenced, should include: (1) three columns: research area, description, citations, and (2) one row for each research area relevant to your paper (Table 2).

Later, you will write at least one paragraph that synthesizes each research area (i.e., each row). When you do, here are a few tips:

Tip: The literature review is your perspective of how prior literature relates to your work, so be sure to convey this perspective. Contrary to what many new researchers think, the literature review is not simply a list of facts. Rather, it is an evidence-based editorial. Therefore, explain your perspective of how relevant literature relates to your research objective.

Tip: Be sure to cite the classics as well as the newest works; not just one or the other. Many authors prefer either the oldest or newest literature. A better middle ground is to cite at least a few classics and at least a few of the recent works that build upon the classics.

Rookie Mistake: Do not list all the literature you have ever read or that is even remotely relevant. You are not trying to prove you have read a lot of papers. You are trying to prove that you know the literature well enough, in this particular area, to cite only what needs to be cited, and nothing more.

Rookie Mistake: A frequent mistake is listing summaries of relevant studies without writing about how the findings relate to the purpose of your paper and focal tensions. Your goal is not just to summarize what is out there. Your goal is to relate what is out there to your research objectives.

4.5 Step 5: Create the Tables and Figures in the Results Section and Add Relevant Details to the Research Design and Methods Section

Each method is different. Therefore, there is a lot of variety in how results tables and figures should be presented. The suggestion here is to create these tables and figures (usually no more than five), so that the primary results are known before writing the full paper.

For guidance on how to best present your data and results, I suggest emulating a model paper using the same (or similar) research design and/or methods. Don't copy the text. Copy the structure. Some additional tips:

Tip: Some academic advisors or co-authors will want you to write the paper before finalizing the results. In my experience, *this is a mistake*. While a working and gradually expanding outline of the paper can be continuously revised as the analyses are ongoing, do not write the full paper until the primary results are finalized. Otherwise, you will end up spending valuable time rewriting the paper, perhaps multiple times.

Tip: Make sure your theory, design, data, and methods are an appropriate match and are *consistent*. This is essential. If they aren't consistent, the reader (and reviewers) will be confused, and confusion = rejection.

Tip: Stay focused on the facts in the Results section! Only provide interpretation if you think a reviewer will get lost or confused. Otherwise, interpretation should be reserved for the Discussion.

Rookie Mistake: A great tip I learned from Dr. Maruping is to not add "surprise" constructs or relationships in the Results section. Make sure all constructs or relationships are clearly identified earlier in the Background or, if new, perhaps in the Research Design and Methods section. Either way, the first time something new appears in regard to theory or background should *not* be in the Results section.

4.6 Step 6: Outline the Discussion

While the details of the Discussion will be determined when you draft the full paper, a good approach is to start with an idea of where you are heading (i.e., have an end goal in mind). Therefore, at this point, I suggest: (1) adding bullets in the Discussion section for primary expected contributions to theory and practice, and (2) adding bullets for limitations (and future research, if desired). Some tips:

Tip: What often happens at this point is that you realize that your contribution might not be either as impressive or as supported by your results as you originally thought. This happens to all researchers, so no reason to get down on your work. Instead, use this an opportunity to revisit your analyses in ways that may strengthen your results, or as an opportunity to revisit your primary contribution or main message in the paper. This is your key opportunity to make sure your contribution will resonate.

Tip: "Synonyms are the enemy of the theorist," was a great piece of advice I heard in a JAIS theory development workshop given by Dr. Suzanne Rivard.

The lesson? Do not use new terminology, even if it is similar, in the Discussion in particular, as it may cause reviewers and readers to think that you are introducing new ideas you have "discovered" as you are finishing the paper. If you find yourself using new terms, either replace them with something more consistent or consider adding these terms much earlier in the paper.

Table 2. Example Literature Synthesis Table

| Research Area | Description | Citations |
|---------------|--|---|
| Agency | Both human and nonhuman agency are considered in the literature. Agency is typically associated with intentionality, acting under uncertainty, and the ability to infer and predict from observed cause and effect. | (Bandura, 2001, 2006; Grossman & Hart, 1983; Latour, 2005; Ross, 1973) (Boudreau & Robey, 2005; Leonardi, 2011; Markus & Silver, 2008; Nissen & Sengupta, 2006; Orlikowski, 2000, 2007; Xiao & Benbasat, 2007) |
| Delegation | Delegation is the transfer of decision or action rights from one agent to another. Such transfers have been considered in the literature in the context of employment, politics, social structures, and between the human and artificial (e.g., technology and artificial intelligence). | (Akinola et al., 2018; Bendor et al., 2001; Fjelstad & Konsynski, 1986; Gill, 1995; Huber & Shipan, 2006; Klein et al., 2006; Leana, 1986; Ribes et al., 2013; Russell & Norvig, 2016; Schriesheim et al., 1998; Tong et al., 2017; Xiong Chen & Aryee, 2007) |
| ... | ... | ... |

4.7 Step 7: Now, Draft the Body of the Paper

Just as with theory papers, it is often easier to write empirical papers from the middle out, starting with the Background (or Literature Review) section. Also, as you write, *iterations* with co-authors really help. I highly prefer an “agile” approach to writing papers over a “waterfall” method. While some academic advisors or co-authors just want to “see the finished paper,” you will undoubtedly do a lot of rewriting if you approach it in this way. Advisors or co-authors might save themselves time, but they are generating a lot of wasted time and effort on your part. Therefore, once each section is drafted, sharing with co-authors and revising collectively is wise.

4.8 Step 8: Now, Write a Draft of the Abstract, Introduction, and Discussion.

Now that you have the primary message and contribution of the paper established, go back and write more final versions of the Abstract, Introduction, and Discussion. Once you write and refine these sections, go back through the rest of your outline and make sure it is *consistent* with your Abstract, Introduction, and Discussion. Consistency is essential. You will likely need to revise some things to improve consistency before you write the rest of the paper. This effort will reduce rewriting efforts as you move forward. A few tips:

Tip: Shorter sentences are better (i.e., too many “ands” or other conjunctions is not a good thing).

Tip: Your Abstract and Introduction are *not* a Sherlock Holmes mystery that start vague and build to a crescendo at the end. Rather, think of them as executive summaries that get right to the point. Do not make the Introduction a cliffhanger and save the surprise contribution for the Discussion.

4.9 Step 9: Go Back through the Entire Paper, Reread, and “Tighten.” Very Important!

Your goal is to remove extraneous text, tighten your main message (i.e., the “red thread”), and clarify anywhere you think there might be confusion. If you find yourself getting bored or even lost or confused as you are reading, the text is too long or is not clear enough. Focus your efforts on revising those areas. I especially recommend using suggestions from the book *On Writing Well: The Classic Guide to Writing Non-Fiction* for improving your writing. Make sure to go through the paper at least three times, *after it is completed*, before finalizing.

Tip: Revise, revise, revise (even after the rest of the paper is drafted or completed). Don’t be obsessed with perfection, especially in early drafts. Be obsessed with incrementally improving.

Tip: Not every paper is structured exactly the same way. *Feel free to deviate from the structures provided here, especially once you start to write and revise.* For instance, three places where deviations are often seen are in the Background, the Results, and the Discussion. Just be careful not to confuse your readers. Your readers should enjoy reading your work and should not have to expend excessive cognitive energy to get through it!

5 Conclusion

This editorial offers guidelines for structuring and planning logical flow in IS papers. The guidelines and tips provided represent a consolidation of lessons learned from my experiences with writing a theory paper as well as other types of papers. I hope these suggestions will help future authors become more efficient and effective writers. Not all efforts need to be trial-and-error, with experience as the only teacher.

References

- Akinola, M., Martin, A. E., & Phillips, K. W. (2018). To delegate or not to delegate: Gender differences in affective associations and behavioral responses to delegation. *Academy of Management Journal*, 61(4), 1467-1491.
- Alvesson, M., & Sandberg, J. (2011). Generating research questions through problematization. *Academy of Management Review*, 36(2), 247-271.
- Baird, A., & Maruping, L. M. (2021). The Next Generation of Research on IS Use: A Theoretical Framework of Delegation to and from Agentic IS Artifacts. *Management Information Systems Quarterly*, 45(1), 315-341.
- Bandura, A. (2001). Social cognitive theory: An agentic perspective. *Annual Review of Psychology*, 52(1), 1-26.
- Bandura, A. (2006). Toward a psychology of human agency. *Perspectives on psychological science*, 1(2), 164-180.
- Barney, J. (2018). Editor's comments: Positioning a theory paper for publication. *Academy of Management Review*, 43(3), 345-348.
- Baskerville, R., Myers, M., & Yoo, Y. (2019). Digital First: The Ontological Reversal and New Challenges for IS. *MIS Quarterly*, 44(2), 509-523.
- Bendor, J., Glazer, A., & Hammond, T. (2001). Theories of delegation. *Annual Review of Political Science*, 4(1), 235-269.
- Boudreau, M.-C., & Robey, D. (2005). Enacting integrated information technology: A human agency perspective. *Organization Science*, 16(1), 3-18.
- Brynjolfsson, E., & McAfee, A. (2014). *The second machine age: Work, progress, and prosperity in a time of brilliant technologies*. Norton.
- Burton-Jones, A., McLean, E. R., & Monod, E. (2015). Theoretical perspectives in IS research: from variance and process to conceptual latitude and conceptual fit. *European Journal of Information Systems*, 24(6), 664-679.
- Busse, C., Kach, A. P., & Wagner, S. M. (2017). Boundary conditions: What they are, how to explore them, why we need them, and when to consider them. *Organizational Research Methods*, 20(4), 574-609.
- Byron, K., & Thatcher, S. M. (2016). Editors' comments: "What I know now that I wish I knew then": Teaching theory and theory building. *Academy of Management Review*, 41(1), 1-8.
- Cals, J. W., & Kotz, D. (2013). Effective writing and publishing scientific papers, part VI: Discussion. *Journal of Clinical Epidemiology*, 66(10), 1064.
- Castelfranchi, C., & Falcone, R. (1998). Towards a theory of delegation for agent-based systems. *Robotics and Autonomous Systems*, 24(3-4), 141-157.
- Chatterjee, S., & Davison, R. M. (2020). The need for compelling problematisation in research: The prevalence of the gap-spotting approach and its limitations. *Information Systems Journal*, 31(2), 227-230.
- Corley, K. G., & Gioia, D. A. (2011). Building theory about theory building: what constitutes a theoretical contribution? *Academy of Management Review*, 36(1), 12-32.
- Fjelstad, O. D., & Konsynski, B. R. (1986). The Role of Cognitive Apportionment in Information Systems. *Proceedings of the International Conference on Information Systems*
- Gewin, V. (2018). How to write a first-class paper. *Nature*. <https://www.nature.com/articles/d41586-018-02404-4>
- Gill, T. G. (1995). Early expert systems: Where are they now? *MIS Quarterly*, 19(1), 51-81.
- Gregor, S. (2006). The nature of theory in information systems. *MIS Quarterly*, 30(3), 611-642.
- Grossman, S. J., & Hart, O. D. (1983). An analysis of the principal-agent problem. *Econometrica*, 51, 7-45.
- Hollenbeck, J. R. (2008). The role of editing in knowledge development: Consensus shifting and consensus creation. In A. M. K. Y. Baruch, H. Aguinis, W.H. Starbuck (Eds.), *Opening the black box of editorship* (pp. 16-26). Springer.
- Holmstrom, B. (1980). *On the Theory of Delegation*. Northwestern University.
- Huber, J. D., & Shipan, C. R. (2006). Politics, delegation, and bureaucracy. In R. E. Goodin (Ed.), *The Oxford Handbook of Political Science*. Oxford University Press.
- Jaccard, J., & Jacoby, J. (2019). *Theory construction and model-building skills: A practical guide for social scientists*. Guilford Publications.
- Klein, K. J., Ziegert, J. C., Knight, A. P., & Xiao, Y. (2006). Dynamic delegation: Shared, hierarchical, and deindividualized leadership in extreme action teams. *Administrative Science Quarterly*, 51(4), 590-621.
- Lange, D., & Pfarrer, M. D. (2017). Editors' comments: Sense and structure—The core building blocks of an AMR article. *Academy of Management Review*, 42(3), 407-416.

- Latour, B. (2005). *Reassembling the social: An introduction to actor-network-theory*. Oxford University Press.
- Leana, C. R. (1986). Predictors and consequences of delegation. *Academy of Management Journal*, 29(4), 754-774.
- Leidner, D. E. (2020). What's in a Contribution? *Journal of the Association for Information Systems*, 21(1), 238-245.
- Leonardi, P. M. (2011). When flexible routines meet flexible technologies: Affordance, constraint, and the imbrication of human and material agencies. *MIS Quarterly*, 35(1), 147-167.
- Locke, K., & Golden-Biddle, K. (1997). Constructing opportunities for contribution: Structuring intertextual coherence and "problematizing" in organizational studies. *Academy of Management Journal*, 40(5), 1023-1062.
- Markus, M. L., & Silver, M. S. (2008). A foundation for the study of IT effects: A new look at DeSanctis and Poole's concepts of structural features and spirit. *Journal of the Association for Information Systems*, 9(10/11), 609.
- Nissen, M. E., & Sengupta, K. (2006). Incorporating software agents into supply chains: Experimental investigation with a procurement task. *MIS Quarterly*, 30(1), 145-166.
- Orlikowski, W. J. (2000). Using technology and constituting structures: A practice lens for studying technology in organizations. *Organization Science*, 11(4), 404-428.
- Orlikowski, W. J. (2007). Sociomaterial practices: Exploring technology at work. *Organization Studies*, 28(9), 1435-1448.
- Rai, A. (2018). Editor's comments: The first few pages. *MIS Quarterly*, 42(2), iii-vi.
- Rai, A., Constantinides, P., & Sarker, S. (2019). Editor's comments: Next-generation digital platforms: Toward human-AI hybrids. *MIS Quarterly*, 43(1), iii-ix.
- Ribes, D., Jackson, S., Geiger, S., Burton, M., & Finholt, T. (2013). Artifacts that organize: Delegation in the distributed organization. *Information and Organization*, 23(1), 1-14.
- Rivard, S. (2014). Editor's comments: The ions of theory construction. *MIS Quarterly*, 38(2), iii-xiv.
- Rivard, S. (2020). Theory building is neither an art nor a science. It is a craft. *Journal of Information Technology*. <https://doi.org/10.1177/0268396220911938>
- Ross, S. A. (1973). The economic theory of agency: The principal's problem. *The American Economic Review*, 63(2), 134-139.
- Russell, S. J., & Norvig, P. (2016). *Artificial intelligence: a modern approach*. Pearson Education Limited.
- Savage, V., & Yeh, P. (2019). Novelist Cormac McCarthy's tips on how to write a great science paper. *Nature Careers Community*. <https://www.nature.com/articles/d41586-019-02918-5>
- Schriesheim, C. A., Neider, L. L., & Scandura, T. A. (1998). Delegation and leader-member exchange: Main effects, moderators, and measurement issues. *Academy of Management Journal*, 41(3), 298-318.
- Schulte, B. A. (2003). Scientific writing & the scientific method: Parallel "hourglass" structure in form & content. *The American Biology Teacher*, 65(8), 591-595.
- Silvia, P. J. (2007). *How to write a lot: A practical guide to productive academic writing*. American Psychological Association.
- Smithey Fulmer, I. (2012). Editor's comments—The craft of writing theory articles: Variety and similarity in AMR. *Academy of Management Review*, 37(3), 327-331.
- Strunk, W., & White, E. B. (2007). *The elements of style*. Penguin.
- Tong, Y., Tan, C.-H., & Teo, H.-H. (2017). Direct and indirect information system use: A multimethod exploration of social power antecedents in healthcare. *Information Systems Research*, 28(4), 690-710.
- Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, 27(3), 425-478.
- Weick, K. E. (1989). Theory construction as disciplined imagination. *Academy of Management Review*, 14(4), 516-531.
- Whetten, D. A. (1989). What constitutes a theoretical contribution? *Academy of Management Review*, 14(4), 490-495.
- Xiao, B., & Benbasat, I. (2007). E-commerce product recommendation agents: use, characteristics, and impact. *MIS Quarterly*, 31(1), 137-209.
- Xiong Chen, Z., & Aryee, S. (2007). Delegation and employee work outcomes: An examination of the cultural context of mediating processes in China. *Academy of Management Journal*, 50(1), 226-238.
- Zinsser, W. (2006). *On writing well: The classic guide to writing nonfiction*. New York, NY.

Appendix A: Planning Worksheet for an IS Theory Paper

Table A1. Planning Worksheet for an IS Theory Paper

| Item | Description | Details |
|---|--|---|
| Area of theoretical focus | What theoretical area is being targeted? | We focus on developing (or extending) _____ theory. |
| Theoretical background | What is the common ground relevant to this area, your objective, and your <i>target audience</i> ? | From literature in this area, we know that _____. General assumption are _____. |
| Theoretical tension | Why is new theory needed? | However, _____. OR It is surprising that_____. |
| Resolution (of theoretical tension) | What is the primary objective of your theory paper? | Thus, the primary objective of this paper is _____. |
| | What theory building (or extending) approach will be applied? | To accomplish this objective, we _____. |
| | What are the conditions under which you develop theory? | We develop theory at the _____ unit of analysis. We assume _____. We bound our theorizing to _____. (list any other conditions that apply) |
| Guidelines (for application) | What steps should future researchers go through when applying this work? | The following guidelines will help future researchers apply this new theory(izing): 1. 2. n. |
| | What future research questions could this theory be applied to? | Areas that may be particularly fruitful for application of this theory(izing) include: 1. 2. n. |
| | How could this work be extended? | This theory(izing) could be extended by: 1. 2. n. |

Appendix B: IS Theory Paper Initial Outline

Title: Succinctly summarize the target audience and theoretical contribution

Abstract

- One or two sentences for each of the following:
 - Area of Theoretical Focus
 - Relevant Background
 - Theoretical Tension
 - Resolution of Theoretical Tension (includes Theory Building Approach and New Theory Dev.)
 - (Optional) Guidelines for Application

Introduction

- One (or two if necessary) paragraph(s) for Area of Theoretical Focus, Relevant Background, Theoretical Tension, Resolution of Theoretical Tension, Guidelines for Application
- Some people also add one more paragraph at the end: Structure of the rest of the paper.

Relevant Background (includes discussion of theoretical tension(s))

- Relevant to this paper, what is already known?
- What is assumed?
- What are the tensions?

Theory Building Approach (Resolution of Theoretical Tension: Part 1)

- This is your methods section and the first part of your resolution of the theoretical tension.
 - Describe and support the theory building approach selected.
 - Describe the boundary conditions.
 - Define the unit of analysis.
 - Describe primary assumptions.
 - Define or describe any other approaches relevant to your theory building and, importantly, to reviewing your paper. In other words, what are some of the criteria the reviewers should apply when evaluating your paper?

New Theory Development (Resolution of Theoretical Tension: Part 2)

- This is the second part of your resolution where you propose and support your theory. Given that many approaches are possible (e.g., framework, boxes-and-arrows diagram, propositions, formulas, etc.), I do not provide much guidance here about which structure is most appropriate. My best suggestion is to look at papers frequented by members of your targeted subcommunity and apply a style or structure relevant to that subcommunity.

Guidelines

- In this section, you are providing a Roadmap for future researchers.
 - Identify a set of steps or guidelines that should be used by those applying your theory
 - Provide opportunities for future research
 - If relevant, discuss limitations, which could also become opportunities for future research

Conclusion

- This section is very brief. Quickly summarize your main objective and contributions.

Appendix C: Planning Worksheet for an *Empirical IS Paper*

Table C1. Planning Worksheet for an *Empirical IS Paper*

| Item | Description | Details |
|----------------------|---|--|
| Area of focus | What is the context of study? Why is it interesting? | This paper focuses on the ____ area. This area is interesting because ____. |
| | Background | What is the common ground relevant to this area, your objective, and your <i>target audience</i> ? |
| Tension | Why are prior findings insufficient? Why must this paper be read? | However, ____. OR It is surprising that ____. |
| | What is (are) your research questions(s)? | Therefore, we ask ____. |
| Resolution | What is the primary objective of this paper? | Given this background, the primary objective of this work is ____. |
| | What theory or theoretical framework will be applied? | Our research questions are evaluated through the lens of ____. |
| | What research design and/or methods will be used? | We apply ____ method to ____ data. |
| Contribution | What is the primary finding? | Our primary finding is ____. Secondarily, we find that ____. |
| | What are the expected contributions? | These findings contribute by ____. The implications are ____. |
| | What are the limitations of this study? | This study is limited by ____. |
| | How might this work enable future research? | Future research could consider ____. |

Appendix D: Initial Outline for an *Empirical IS Paper*

Title: Succinctly identify the particular relationship or area of focus; must be directly related to the research question

Abstract

- One or two sentences for each of the following:
 - Area of Focus: What is the context of this research? Why is it interesting or why does it matter?
 - Background: Synthesis of research relevant to your area, target audience, and objective.
 - Tension: What is unresolved? What am I going to get wrong if I don't read this paper?
 - Resolution: How is this paper going to resolve this issue? (Objective, Theory, and Design)
 - Contribution: What is the expected contribution?

Introduction

- One (or two if necessary) paragraph(s) for Area of Focus, Background, Tension, Resolution, Contribution
- Some people also add one more paragraph at the end: Structure of the rest of the paper.

Background (a.k.a. perspectives on relevant prior theory, assumptions, and tensions)

- Introduce: What theory base(s) will you be pulling from? I like a table with columns for Research Area (just give it a descriptive name), Description, Sources (i.e., list of citations).
- Then, in the same order as the table, describe and synthesize the research in each Research Area identified in the table:
 - Research Area 1: Describe what we know (synthesis and consensus) and what we don't know. Be sure to highlight any assumptions (or gaps) that this paper will revisit.
 - Research Area *n*: (same)
- Summarize: The last section should briefly bring everything together, by highlighting what is known, but also what is either not known or assumed that must be revisited (by this paper).

Research Design and Methods (i.e., Resolution Part 1)

- Study design
- Data source description(s)
- Analysis and/or estimation methods

Results (i.e., Resolution Part 2)

- You should be the expert here. Stick to the facts. Emulate a model paper using the same or similar method.

Discussion (i.e., Contribution)

- Remind the reader of the area of focus, tension, and, if needed, the tension resolution strategy.
- Contributions to research
 - One paragraph for the primary finding, how it relates to or extends prior research, and the implications.
 - Subsequent paragraphs for secondary findings, as well as how they extend research, and implications.
- Contributions to practice
 - How might your primary finding be applied by practitioners?
 - How about your secondary findings?
- Limitations and Future Research
 - Reiterate strengths
 - Identify limitations (to validity, generalizability, etc.)
 - Identify opportunities for future research

Conclusion

- Synthesize what your paper set out to do and accomplished.
- Emphasize what is novel and why it is important.

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