Standalone Literature Reviews in IS Research

# Standalone Literature Reviews in IS Research: What Can Be Learnt From the Past and Other Fields?

Panel

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#### Abstract

This panel addresses the divergent expectations of the IS community on new directions in the genre of standalone literature reviews (SLRs), which synthesize and interpret a body of literature within a domain. The primary purpose of the panel is to spur a controversial discussion on a) what the IS field can learn from other fields and where it should be specific, b) how the IS field should move forward to foster the genre of SLRs, and c) what are the best approaches to train doctoral IS students in publishing SLRs. The panelists initiate a vital discussion on where the IS field can profit from considering approaches of other fields and where it should focus on IS specifics that are not shared by other fields, which SLR processes are of particular importance for the IS field, and whether and how doctoral IS students should be trained in writing SLRs.

Keywords: Standalone literature reviews, cross-field comparison, training doctoral IS students

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## Introduction

The standalone literature review (SLR) - a type of scientific article, the primary purpose of which is to synthesize and interpret the body of literature – is an established research genre in many academic disciplines. The IS community has proven to be receptive for SLRs in several regards. The editorial boards of academic journals have accounted for the importance of SLRs in various forms. Among the top 40 IS journals as identified in the study of Lowry et al. (2013), 17 journals explicitly welcome SLRs as a research genre in their editorial statements and 36 journals have published at least one SLR between 2000 and 2014 (Wagner and Schryen 2016). MIS Quarterly launched a "Theory and Review Department" in 1999 (Markus and Saunders 2007; Watson 2001), the European Journal of Information Systems recognized the need for stronger support of SLRs (Rowe 2012, 2014), Communications of the AIS published a special issue on SLRs in 2015 (Tate et al. 2015), and the Journal of Information Technology just recently published a debate on systematic SLRs (Boell and Cecez-Kecmanovic 2015a, 2015b; Chiasson 2015; Oates 2015; Schultze 2015; Watson 2015). IS authors have responded to the call for SLRs by contributing more than 200 SLRs to the above mentioned set of top IS journals since 2000 (Schryen et al. 2015; Paré et al. 2015). Our analysis shows that among these SLRs, the 20 most cited ones have received high numbers of citations (min=454, max= 8,407, median=732), with the SLRs of Alavi and Leidner (2001), DeLone and McLean (2003) and Legris et. al. (2003) being the most cited ones (8,407, 6,452 and 2,631 citations, respectively.) These figures indicate a high level of diffusion of SLRs in the IS field and a high impact in the recent IS literature.

There is consensus of scholars across fields that synthesizing the findings of the literature is a mandatory contribution of SLRs (e.g., Blumberg et al. 2005; Cooper 1998; Fink 2014; Webster and Watson 2002). Some researchers argue that SLRs can serve as vehicles for (1) theory building by adapting existing theories, building new theories or synthesizing multiple theories (e.g., Cooper 1998; Paré et al. 2015; Rowe 2014; vom Brocke et al. 2015; Webster and Watson 2002); (2) theory testing when a sufficient amount of empirical evidence has accumulated in the literature (e.g., Cohn and Becker 2003; King and He 2005; Okoli 2015; Rowe 2012, 2014; vom Brocke et al. 2009); or (3) identifying research gaps in order to stimulate research by substantiating a need for research and motivating researchers to close the gaps (e.g., Gall et al. 1996; Levy and Ellis 2006; Schwarz et al. 2007). However, the question emerges how the IS field can learn from the past and from other fields to enhance these different contributions of SLRs and to increase the impact on subsequent IS research in terms of epistemological enhancements (qualitative impact) and citations (quantitative impact). Developing new perspectives on SLRs should also include foresight of best ways to train the next generation of IS scholars through inclusion in doctoral program curricula.

This panel addresses the divergent expectations on SLRs in the IS field. The primary purpose of the panel is to spur a controversial discussion on whether and which new perspectives are needed in the IS field to enhance the impact of SLRs. The comprehensive expertise and experience of our panelists regarding SLRs and their high relevance for the IS discipline are excellent conditions for attracting a large audience and initiating a vital discussion on how the IS field can profit from following new directions in the genre of SLRs.

#### Issues

The introductory part of this proposal shows that SLRs can contribute to knowledge preservation and generation in many different ways across scientific fields. However, it also indicates that the IS field has not yet developed a clear picture of which new directions are fruitful to foster the development of these contributions. The search for these new directions is the guiding idea of the panel and crystallized in the following questions, which will be discussed during the panel by both the panelists and the attendees:

- 1. What SLR approaches can the IS field learn from other fields, and what IS-specific conditions demand the development of new approaches?
- 2. How should the IS field move forward to foster the genre of SLRs?
- 3. What are the best approaches to train doctoral IS students in publishing SLRs?

The first question targets the specifics of IS SLRs in contrast to their similarities with those of other fields. Shirley Gregor points to specific characteristics of the IS field in that IS includes design related knowledge and also studies "moving targets," which means that there is genuine change in the objects of study in short periods of time and that practices in other disciplines with regard to SLRs are not necessarily a good model for IS. Kai Larsen highlights the specifics of the IS field to face a rapidly expanding knowledge enterprise, and even questions the value of SLRs. Stacie Petter offers the perspective that while other disciplines devote entire journals to SLRs and emphasize SLRs, this might not be necessary in the IS field given our extensive use of theories from reference disciplines. These perspectives invite to focus on the specifics of the IS field. Other scholars suggest to identify similarities of the IS field with other fields: Frantz Rowe stresses that we have done far less than other fields in terms of meta-analysis and Guy Paré draws on the fields of health sciences and medical informatics to explain emerging types of reviews which may be highly relevant to the IS field but unknown to most IS scholars.

The second question focuses on the future of IS SLRs. Unsurprisingly and consistent with different expectations on what make SLRs epistemologically particularly valuable, the panelists suggest different avenues for the future of SLRs in the IS field. Frantz Rowe sees the greatest epistemological potential of SLRs when adopting an interpretive viewpoint, i.e., by both using the principle of the hermeneutic circle and applying lenses, such as frameworks, to problematize the phenomenon in a novel way and identify new gaps and problems. He also suggests that studies in IS could benefit from replications. Stacie Petter concurs in the latter regard and stresses that it becomes challenging to conduct meta-analyses within IS if we fail to require authors to report necessary information within publications to correct for artifacts (or errors) or we choose not to value replicated studies in our field. Different approaches are suggested by Kai Larsen, who argues that (1) as only little knowledge exists regarding how successful theory reviews have been in covering IS theories, the traditional approach to theory reviews should be replaced by applying traditional sampling approaches to large theories and (2) by building design science innovations into the SLR process, reviews can become "living reviews." Shirley Gregor suggests more focus in specifying acceptable SLRs processes on the requirements for design-related knowledge and the need to position work carefully for the "moving targets" represented by new forms of systems, technologies, and methods. Finally, Guy Paré suggests the days of the "naïve" narrative review with no explicit attention to purpose, systematicity and transparency are over and argues that trustworthiness be considered a virtue that should govern all review articles, irrespective of their particular goals, scope and methods.

The third question raises the issue of training doctoral IS students to write and publish SLRs. Guy Paré recognizes the centrality of literature reviews in doctoral research preparation and, hence, proposes that all IS students must attend a seminar on this topic early in their training. Ideally, this seminar would pursue three main objectives. The first goal is to develop an understanding of the types of literature reviews that social scientists publish. The second objective is to develop a nuanced understanding of how each review type is conducted (i.e. critical steps). The third goal is to develop knowledge and skills that would enable doctoral students to critically and constructively assess the quality of various types of review articles. Student learning would take place through a series of practical exercises around categorizing, coding, assessing, and evaluating review articles and when they develop and write their own review articles throughout the seminar (team assignment). Frantz Rowe will argue that training is needed, but only to some extent and that its benefits are related to the type of reviews. He proposes that the more systematic the review should be, a characteristic which is somehow related to the review goal, the more researchers should be trained. However, for highest epistemological goal, typically review for understanding, the more the younger authors should partner with experienced authors on the topic. Stacie Petter offers a more skeptical perspective about the usefulness of training doctoral IS students in publishing SLRs and notes that while SLR offer great insights to doctoral students seeking to identify potential research questions as well as learn the literature within a domain, developing an SLR as a result of the dissertation process is not always a worthwhile endeavor for many doctoral students based on the phenomenon of interest and the availability of current SLRs on the topic.

## **Panel Moderators and Session Chairs**

- Guido Schryen, University of Regensburg, Germany
- Alexander Benlian, Technical University of Darmstadt, Germany

## **Panelists and Position Statements**

• **Frantz Rowe, Université de Nantes, France**: Professor Rowe argues that SLRs typically synthesize knowledge for describing, understanding, explaining or testing a phenomenon. He will comment on the characteristics of these different types of reviews and position meta-analysis as a

type of review for testing. He will also argue that the epistemological potential of SLRs in IS is far from being sufficiently exploited. He claims that we can defend this argument both from a positivist viewpoint and from an interpretive viewpoint. From a positivist viewpoint, and related to the prior question, we have done far less than other fields in terms of meta-analysis. Meta-analysis stems from the premise that replication is possible, and even desirable. In fact when testing a medication, experiments assume that the active principle in the medication has causal effect, and that this causal effect operates under certain desirable conditions, but also may cause secondary effects and sometimes should not be administered under certain conditions. The aim of the replication tests is to elucidate the main positive effect and uncover these desirable and undesirable (secondary and negative) conditions. Studies in IS could benefit from replications, especially when showing negative effects, especially when this is counterintuitive that it is interesting. Furthermore, Prof. Rowe will argue that that there is probably even a greater epistemological potential from an interpretive viewpoint, i.e. by both using the principle of the hermeneutic circle and applying lenses, such as frameworks, to problematize the phenomenon in a novel way and identify new gaps and problems. Using appropriate lenses to see through the literature, we can project new avenues (problems) to research. And this is where he will argue the IS discipline should go if we want reviews to be the most stimulating.

- **Guy Paré, HEC Montréal, Canada:** Prof. Paré will first focus on various types of reviews aimed at describing, understanding, theory testing and explaining which are unknown of most IS scholars. He will provide illustrations of how these forms of synthesis can contribute to knowledge development in our domain. He also proposes to compare how the fields of IS and medical informatics have exploited the epistemological potentials of SLRs and to provide a few recommendations. He believes that all genres and forms of literature reviews represent an extraordinary enablement to facilitate knowledge development in our field. However, literature review articles need to adhere to the same high standards of quality as other empirical studies if they are to be trustworthy. In his talk, he will explain why all forms of literature reviews should be planned and conducted with the twin aspects of quality of conduct (i.e. systematicity) and quality of reporting (i.e. transparency) in mind.
- Shirley Gregor, Australian National University, Australia: Professor Gregor argues that there needs to be further consideration for SLRs in information systems in particular, as our field requires theory that will inform design and action in addition to other types of knowledge. Theory needs to be developed for artifact design and development, where the artifacts can include management IT strategy, interventions or systems. Review methods for this type of knowledge development are not well dealt with in treatments of SLRs: for examples see Pare et al (2015) and Rowe (2015). In addition, a significant issue in conducting SLRs in information systems is that the phenomena that we study are "moving targets" - rapid developments in information technology mean that there is genuine change in the objects of study in short periods of time. In addition, new concepts and terminology are introduced to accompany the morphing of technologies from one form to another. This panelist will discuss how genuine change may be distinguished from more ephemeral fads and fancies, and how intellectual scholarship requires us to depict the lineage of the concepts, theories and empirical work that we review. In addition, she suggests that in undertaking reviews for design-related knowledge, it is more important to cast the net widely in identifying relevant prior work, rather than very systematically studying a comparatively small sample. Illustrative examples are given from e-commerce and knowledge-based systems. Her propositions are that (i) good reviews are the basis of good theorizing, (ii) the special nature of SLRs for design-related theorizing should be recognized; and (iii) in information systems, good reviews include important prior work on the basis of membership of the class of systems to which the current objects of study belong.
- Kai R. Larsen, University of Colorado Boulder, USA: In his presentation, Dr. Larsen will argue that while behavioral IS theories and related SLRs have been enormously successful in providing a shared focus, language, and toolkit for researchers, precious little knowledge exists regarding how successful these theory reviews have been in covering IS theories. He will lead a discussion about whether the traditional approach to theory reviews makes sense for a rapidly expanding knowledge enterprise. He will suggest that for large and popular theories, it has become nearly impossible to fully uncover the complete evidence. His presentation will provide evidence

for the following hypotheses and suggest a road forward for IS theory reviews that blends the traditional theory review with ontology development: (i) Past reviews of IS theories have covered only a small part of the relevant literature. (ii) By applying traditional sampling approaches to large theories, less bias is allowed into our SLRs. (iii) By building design science innovations into the SLR process, reviews can become "living reviews." (iv) By carefully developing ontologies for the main theories in IS, we can start to understand the epistemological foundations of our constructs through shared agreement of definitions and shared understanding of relationships.

• **Stacie Petter, Baylor University, USA:** Dr. Petter argues for the benefits of SLRs, but suggests that the value of the knowledge created via a SLR varies on the stage of theoretical development for the phenomena. She notes that only a small number of journals have designated sections or editors within the journal devoted to SLRs and suggests this serves as a signal to researchers regarding the perceived value of SLRs in the IS field. She also notes the opportunity to improve the value of SLRs in IS, particularly by recognizing when there is a need for SLRs and which type of SLRs is most appropriate for synthesizing and interpreting the literature about a phenomenon. Recognizing when an SLR is a fruitful research activity for understanding a specific phenomenon is an important skill that doctoral students should learn during their program. As IS researchers recognize when and how SLRs provide value in the investigation of phenomena, she argues that the resulting SLRs will offer more of an impact to IS and other fields.

## **Panel Structure**

The panel will take 90 minutes, with a focus on discussion (65 min). It consists of the following four parts:

- Part 1 (Introduction, 10 min): One of the session chairs (Guido Schryen) welcomes all participants, gives a brief introduction into which issues the panel addresses and what the primary goals of this panel are, gives an overview of the panel structure, and finally introduces all panelists.
- Part 2 (Discussion, 65 min): The main part of the panel is a discussion of the panelists and the attendees in order to implement an interactive format. The discussion contains three time slots, each of which takes about 20-25 mins and targets one of the three issues raised above. In each time slot, one of the moderators briefly presents the issue to be discussed (2 mins), some (not necessarily all) panelists provide brief statements on the particular issue (1-2 mins each), and then the discussion with the audience starts. The guiding idea of moderating the discussion lies in the stimulation of a lively debate mainly by asking the audience for i) stating experience with SLRs in the IS field or in other fields that contradict or confirm statements of the panelists and ii) suggesting SLR research or teaching paths that have been ignored by the panelists. This format allows switching between panelist statements and discussion several times, thereby making the panel more interesting and varied.
- Part 3 (Closing statements of the panelists, 2 min each panelist): All panelists give a closing statement which reflects their perception of the discussion.
- Part 4 (Closing statement of the session chairs, 5min): One of the session chairs (Alexander Benlian) briefly summarizes the panel from his perspective, thanks all panelists for their valuable contributions to the panel and thanks the audience for their attendance and participation in the discussion.

# **Participation Statement**

All participants have made a commitment to attend the conference and serve on the panel if it is accepted.

# **Biographies**

**Guido Schryen** is a Professor of Management Information Systems at the University of Regensburg, Germany. His research interests cover the business value of IS, decision support methodologies, and literature reviews and epistemology. He has published both quantitative and qualitative research in international journals, including *European Journal of Information Systems, European Journal of Operational Research, OR Spectrum, Communications of the AIS, Communications of the ACM,* and others. He recently received a research grant from the German Research Foundation (DFG) for the project "Epistemological Advances Through Qualitative Literature Reviews in Information Systems Research".

**Alexander Benlian** is a Professor of Information Systems and Electronic Services at Darmstadt University of Technology (TU Darmstadt), Germany. His main research interests are in the use and value of information technology, literature reviews, and digital business transformations. His work has appeared in international journals such as *Journal of Management Information Systems, Journal of the Association for Information Systems, European Journal of Information Systems, Information Systems Journal, Journal of Information Technology, The Journal of Strategic Information Systems*, and several others. He is currently Associate Editor of the *European Journal of Information Systems* and the *International Journal of Electronic Commerce* and serves the Editorial Review Board of the *Journal of Service Research*.

**Frantz Rowe** is a Professor at the Université de Nantes and SKEMA Business School. He has directed 26 PhD dissertations, and been the Editor-in-Chief of Systèmes d'Information et Management and of the *European Journal of Information Systems* where he introduced the literature review section among others. His reviews are related to IS-enabled organizational transformation. His editorial in *EJIS* (2014) offers a typology of reviews based on research goals, breadth, systematicity, argumentative strategy. It also delineates the genre with respect to pure theory development papers and gives recommendations for publishing reviews in top journals. He has given seminars on this genre in many academic institutions and has published in over 40 peer-reviewed journals. He is a Fellow of the AIS.

**Guy Paré** is a Professor of Information Technology and holds the Chair in Digital Health at HEC Montréal, Canada. Over the past few years, he has developed expertise in the conduct of various forms of literature reviews, both qualitative and quantitative, to support evidence-based practice in IS and medical informatics. He has reflected on the critical notions of systematicity and transparency in literature reviews in a thought-provoking Issue and Opinion paper to appear soon in *European Journal of Information Systems*. He has recently developed a seminar that recognizes the centrality of literature reviews in doctoral research preparation and aims at deepening and broadening doctoral students' understanding of what literature reviewing entails. His contributions to literature reviews have appeared in *Journal of the American Medical Informatics Association, Journal of Medical Internet Research, Information & Management, European Journal of Information Systems*, and *Communications of the AIS*.

**Kai R. Larsen** is an Associate Professor at the Leeds School of Business, as well as courtesy faculty in the Department of Information Science at the University of Colorado. He received the 2015 Association for Information Systems Technology Challenge Award for his work related to the Inter-nomological Network search engine, which utilizes keyword, semantic, and taxonomic search to improve the recall of literature reviews by 400%. Dr. Larsen has two decades of experience with literature reviews. His literature reviews have primarily addressed antecedents to IS success and technology acceptance. At present, his literature reviews focus on the creation of an interdisciplinary ontology of behavior while simultaneously emphasizing design-science methodological innovations created to improve tools and technologies for literature review and meta-analysis. His work demonstrates that Natural Language Processing (NLP)-based ontology-learning approaches enable automatic extraction of nomological networks from theory articles.

**Shirley Gregor** is the foundation Professor of Information Systems at the Australian National University, Canberra. She is currently Associate Dean Research in the College of Business and Economics. Her research interests include innovation with information and communications technologies, knowledge systems and the philosophy of technology. She has published in leading journals including *MIS Quarterly, Journal of Management Information Systems, Journal of the Association of Information Systems,* and the *European Journal of Information Systems*. She was a Senior Editor for *MIS Quarterly* 2008-2010 and was Editor-in-Chief for the *Journal of the Association of Information Systems* from September, 2010 to September, 2013. In these roles and through the writing of her much cited papers on theory in general and theory for design science, she has become increasingly aware of the need for good scholarship in preparing literature reviews and the identification of the lineage of the theories and concepts that we use.

**Stacie Petter** is Associate Professor of Information Systems at Baylor University. She has published literature reviews of the evaluation of information systems using both qualitative and quantitative techniques. She has published both qualitative and quantitative literature reviews to synthesize research, test models, establish research agendas, and identify gaps within research domains. Her research has appeared in journals such as *MIS Quarterly, Journal of Management Information Systems, Journal of the Association for Information Systems*, and the *European Journal of Information Systems*, among others. She is the incoming Editor for *The Data Base for Advances in Information Systems* effective January 2017.

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