

An Analysis of Literature Reviews on IS Business Value

How Deficiencies in Methodology and
Theory Use Resulted in Limited Effectiveness

First Scandinavian Conference of IS
Rebild, August 2010

Guido Schryen



Does IS matter?

IT does not matter

(Carr 2003)

Doubt about
strategic power
(IS are commodities)

(West & Courtney 1993,
Hitt & Brynjolfsson 1996)

No positive impact on
productivity, stock
market, and ROA

(Im et al. 2001, Dehning & Stratopoulos
2002, Stiroh & Botsch 2007, ...)

Causal relationship
between IS and firm
performance
unexplained

(Baker et al. 2008)



**IS researchers have not fully explained
the economic relevance of IS**

Possible explanations for this deficiency

- 1 Value of IS is actually limited and has been overrated by IS researchers
- 2 IS are economically valuable, but the specific types of value have not been identified or/and not clearly demonstrated (Kohli & Grover 2008)

Personal belief:

Being an IS researcher, **I believe in assumption (2)**.
(I doubt that the wide use of IS in practice to support core business processes in many service and manufacturing industries is based on the error of practitioners.)

Hypothesis:

Literature reviews (a key instrument for identifying and synthesizing knowledge) have not been used effectively.

Research Question

Have literature reviews on IS business value appropriately drawn on methodologies and theories to explain the economic relevance of IS?

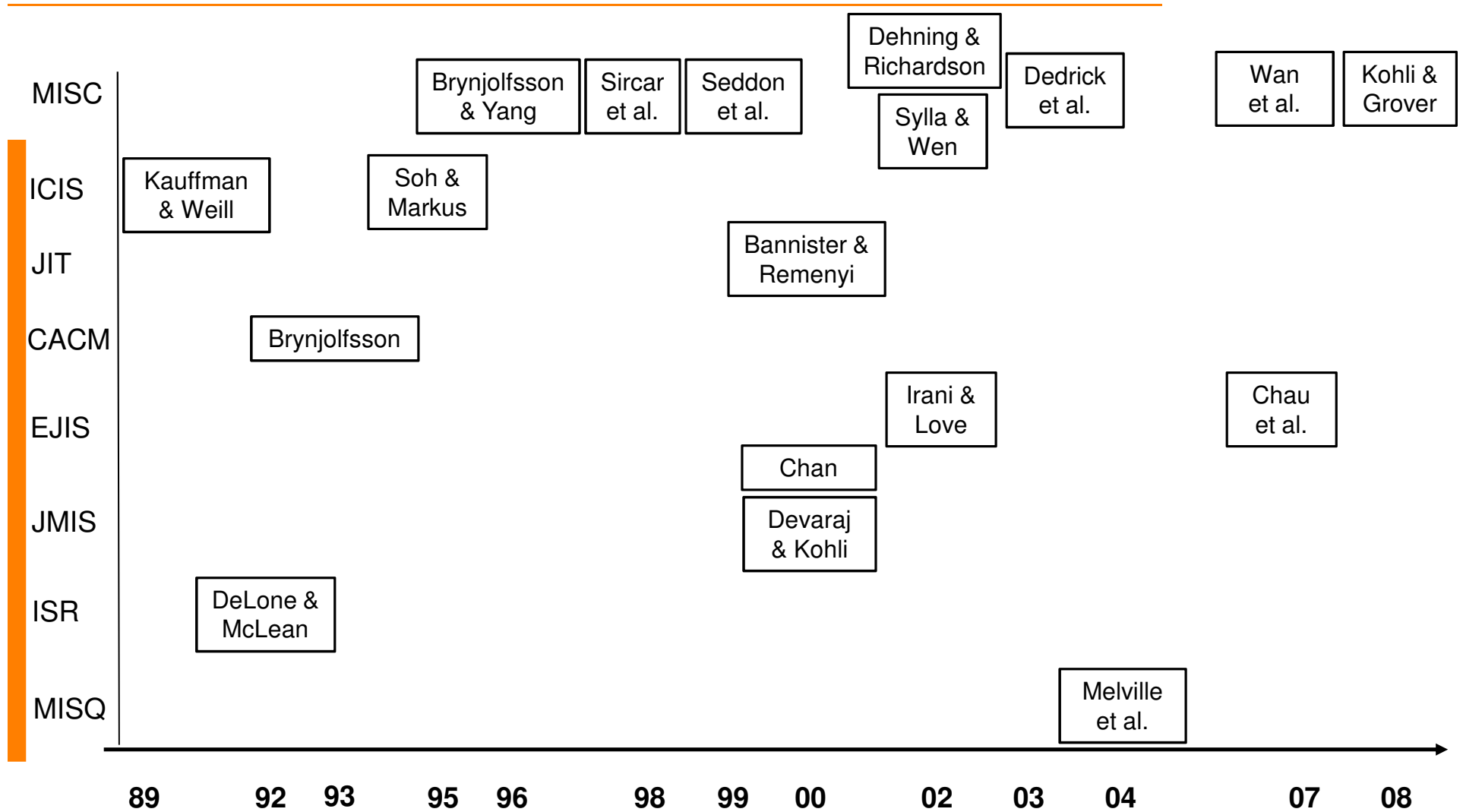
What this study does not explore:

- Which topics and questions of IS business value have been covered in reviews?
(Schryen 2010: Preserving knowledge on IS business value: what literature reviews have done, *Wirtschaftsinformatik/Business & Information Systems Engineering (BISE)*, Vol. 52, No. 4)
- How can gaps in IS business value research be addressed in further research?
(Schryen and Bodenstein 2010): A decision-theoretic foundation of IS business value research, *Proceedings of the 18th ECIS, Pretoria, South Africa*)

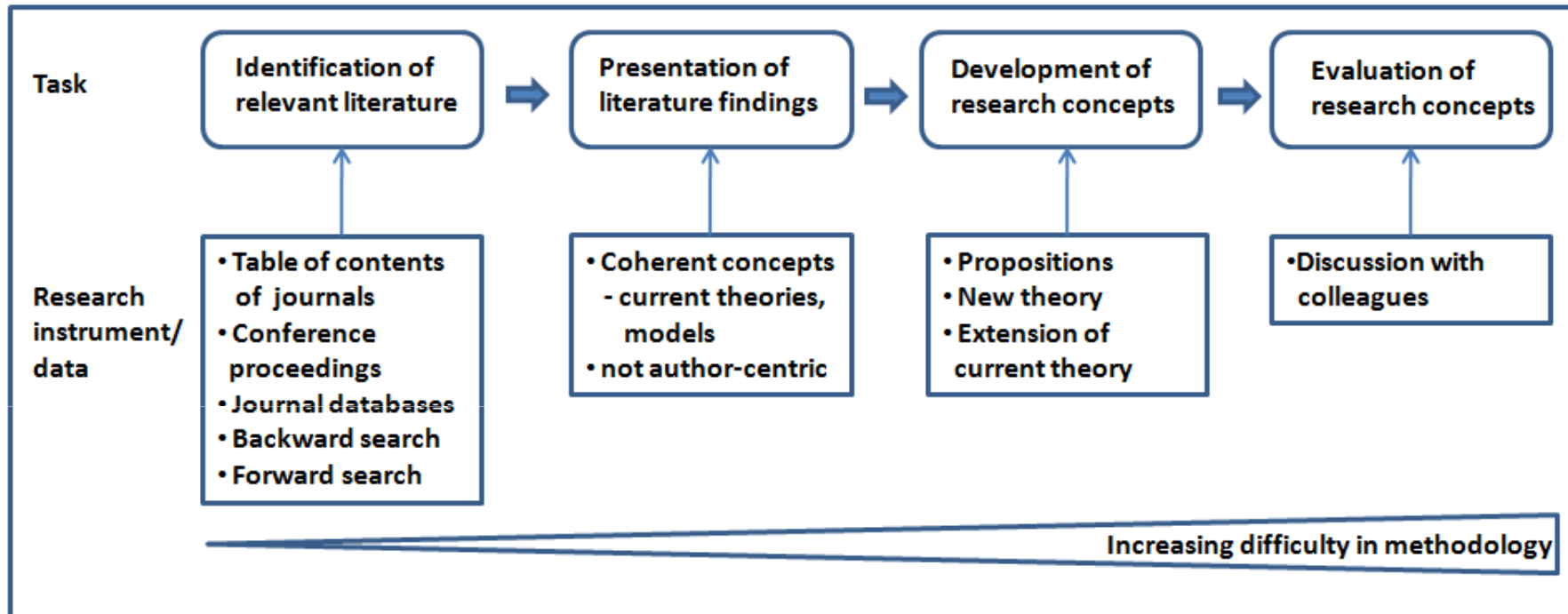
Research Methodology/Agenda

- 1** Identification of literature reviews on IS business value published in past 20 years
- 2** Identification of (methodology and theory) requirements on literature reviews
- 3** Analysis of literature reviews regarding the requirements (and cross-review analysis)
- 4** Suggestions for future reviews

Literature reviews on IS business value



Requirements on Literature Reviews



(Webster & Watson 2002)

- Essential “ingredients” of literature reviews: Coherent methodology and theories (Baker 2000, Bem 1995, Webster & Watson 2002, Zorn & Campbell 2006)
- Theories are required to have logic included and must explain why variables or constructs come about or why they are connected (Sutton & Staw 1995)

Key results of analysis and implications – **Identification of relevant literature**

Results:

- About one third of all reviews does not explicitly describe how the authors identified relevant literature and which criteria they used to select studies.
- Only one study (Melville et al. 2004) describes the selection procedure in detail.

Implications:

- Not clear whether results draw a representative picture of the literature
=> Limitation of “informational value”
- Difficulties in identifying complementary, unexplored literature search spaces => Impeding of progress in reviewing the literature

Key results of analysis and implications – **Presentation of literature findings**

Results:

- Most reviews apply a classification to structure the presentation of literature findings (“what” elements)
- One Review (Dehning & Richardson 2002) applies a research framework (“what“ and “how“ elements)
- Two reviews (Dedrick et al. 2003, Melville et al. 2004) apply theories (also „why“ elements): production theory and resource-based view

Implications:

- Opportunities to validate theories of IS business value research remain unexploited
- Missing causal links (one of the key deficiencies) are not addressed
=> Low explanatory power of IS business value research

Key results of analysis and implications – **Development of research concepts**

Results:

- Five reviews do not develop any research concept
- Six reviews provide informal research recommendations
- Three reviews provide concrete research propositions
- One review develops a formal decision model
- One review suggests a process model (without explanatory component)
- **Two reviews (DeLone & Mclean 1992, Soh & Markus 1995) propose theories: IS success model/theory and process theory, respectively**

Implications:

- Development and extension of IS business value theories is underdeveloped
 - => Missing causal links are not addressed
 - => Low explanatory power of IS business value research

Key results of analysis and implications – **Evaluation of research concepts**

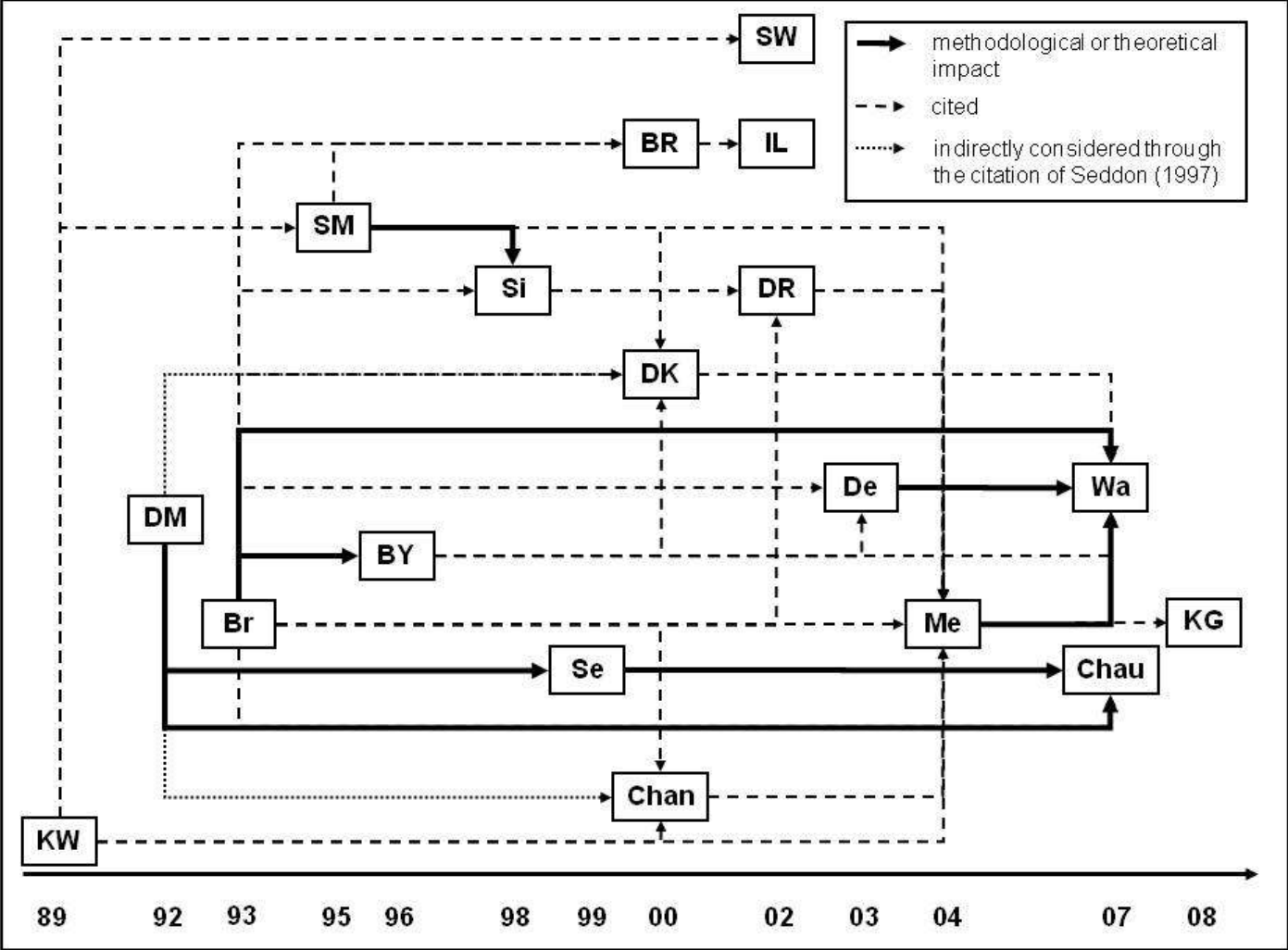
Results:

- Only one work (Devaraj & Kohli 2000) performs an evaluation of the research concept (propositions) through empirical study in health care industry
- Evaluation of research concepts and proposed theories is the most disregarded task

Implications:

- Validation of concepts and theories in practice is missing
=> Weak empirical support of theoretical contributions

Key results of analysis and implications – Cross-review analysis (1)



Key results of analysis and implications – **Cross-review analysis (2)**

Results:

- Only five reviews use prior reviews for methodological or theoretic input
- Each review based on a theory is reused by at least another one, i.e. theory-based reviews determine large parts of the relationships between reviews
- Overall linkage of reviews is weak in terms of quantity and quality

Implications:

- Almost no progress in theory development and advancement

Concluding remarks

- 1 Enhancement of transparency through a **systematic literature search** and an explicit description (see Melville et al. 2004)
- 2 More thorough **drawing on theories** (see Dedrick et al. 2003, Melville et al. 2004)
- 3 **Development and extension of IS business value theories** (for an overview of theories used in IS research see Melville et al. 2004 and http://www.fsc.yorku.ca/york/istheory/wiki/index.php/Main_Page)
- 4 Suggestion and demonstration of **guidelines for the evaluation of research concepts and theories**
- 5 Finally: **Appreciation of work of scholars**, because providing good reviews are challenging research tasks!

**Thank you for
your attention...**

**... and a special thank to Virpi Tuunainen
for discussing this paper.**