



A Contemporary Look at Methodological Shifts and Publication Trends in the Business Informatics Community

Ronja Ruth Schwinghammer · Jan-Hendrik Schmidt · Nane Winkler ·
Alexander Benlian · Thomas Hess

Received: 30 October 2024 / Accepted: 3 February 2025
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Abstract This study explores recent trends in the adoption of research methods and publication practices within the Business Informatics (Wirtschaftsinformatik, WI) community in German-speaking countries, taking into account the various research paradigms in the Information Systems (IS) discipline. A scientometric analysis of more than 1,800 peer-reviewed journal articles by WI professors from 2010 to 2020 reveals two key findings. First, research methods from positivist, interpretive, and constructivist paradigms have been adopted in a balanced manner, reflecting progress and maturity within the WI community. Second, a trend toward increased publication in international IS journals was observed, with constructivist research notably well represented. These findings indicate a growing presence of the WI community in international IS journals while maintaining methodological diversity.

Keywords Wirtschaftsinformatik community · Research paradigms · Methodological trends · Publication patterns · Scientometric analysis

1 Introduction

The study of information systems (IS) has traditionally followed two perspectives with different goals in knowledge creation. In German-speaking countries, the Business Informatics (Wirtschaftsinformatik, WI) community emerged with as strong emphasis on practical problem-solving. Its primary aim was to develop information technology (IT) solutions for organizational use (Heinrich and Riedl 2013). This approach relied on analytical optimization and software engineering to create innovative IT artifacts that benefit both IS practitioners and scholars (Hevner et al. 2004; Österle et al. 2010). To this end, the WI community maintained strong ties with industry, ensuring practical relevance by designing IT artifacts tailored to organizational needs (Buhl et al. 2012). Meanwhile, the international IS community, led by North American IS scholars, focused on advancing theoretical understanding. It conducted empirical studies of socio-technical and economic IS phenomena to explain how individuals and organizations use IS (Chen and Hirschheim 2004; Orlikowski et al. 1991).

These orientations reflect fundamental differences in knowledge generation within IS research. The WI community, grounded in constructivism, focuses on developing and evaluating practical solutions (Österle et al. 2010). This approach is rooted in Design Science Research (DSR), which involves iterative cycles of artifact creation, development, and validation (Österle et al. 2010; Peffers et al. 2018). In contrast, the international IS community, led by North American scholars, initially adopted positivism and later integrated interpretivism (Frank et al. 2008). Its research is centered on developing and testing theories and models to explain socio-technical and economic IS phenomena, such as the complex interactions between IT,

Accepted after three revisions by Kai Lung Hui.

R. R. Schwinghammer · T. Hess (✉)
Institute for Digital Management and New Media, LMU Munich
School of Management, Ludwigstrasse 28, 80539 Munich,
Germany
e-mail: thess@lmu.de

J.-H. Schmidt · N. Winkler · A. Benlian
Information Systems and Electronic Services Group, Technical
University of Darmstadt, Hochschulstrasse 1, 64289 Darmstadt,
Germany

individuals, and organizations (Mingers 2003; Sidorova et al. 2008).

The choice of research methods naturally follows these epistemological orientations. Positivist and interpretive approaches use empirical research methods to explain observable phenomena (Hassan and Mingers 2018). This leads to the development of theories such as the Unified Theory of Acceptance and Use of Technology (Venkatesh et al. 2003). Although empirical methods strongly contribute to theory building, they often face the challenge of providing practical guidance for IS practice (Benbasat and Zmud 1999; Sen et al. 2022). Constructivist research methods, particularly DSR, focus on developing IS and innovative artifacts to provide practical solutions (Österle et al. 2010). However, these methods have been criticized in the past concerning their scientific rigor (Winter 2008; Peffers et al. 2018).

These methodological differences have sparked ongoing debates about balancing scientific rigor and practical relevance in IS research (e.g., Venable 2007; Nunamaker et al. 2015; Sen et al. 2022). In the early 2010s, discussions focused on three main issues. First, the epistemological assumptions and rigor of different research paradigms (e.g., Österle et al. 2010; Baskerville et al. 2011). Second, achieving rigor in constructivist research (e.g., Winter 2008; Österle et al. 2010). Third, increasing the visibility of constructivist research in leading IS journals (e.g., Lyytinen et al. 2007; Mettler and Sunyaev 2023). These debates influenced publication practices within IS communities. The WI community established the research journal *Wirtschaftsinformatik* (later *Business & Information Systems Engineering*) to address both IS academics and practitioners. The international IS community, led by North American IS scholars, emphasized theoretical contributions that shaped the standards for publishing in the AIS Basket of Eight (AIS8) journals (e.g., Lyytinen et al. 2007).

Previous studies have shown a gradual evolution in research approaches within IS communities. While early studies revealed a strong preference for constructivist research methods in the WI community, other approaches have gained prominence over time (Wilde and Hess 2007). However, prior studies do not fully capture how the WI community has navigated its methodological choices since the debates of the 2010s (Winkler et al. 2023). In contrast, the methodological development of the international IS community, led by North American IS scholars, is well documented (e.g., Palvia et al. 2015; Mazaheri et al. 2020). This creates a gap in understanding the *state-of-the-art* of the WI community, particularly regarding its research methods and publication outlets since the analysis by Wilde and Hess (2007). This study addresses this gap by exploring two research questions: (1) How has the adoption of constructivist, positivist, and interpretive paradigms and

their research methods evolved in the WI community from 2010 to 2020, including changes in methodological rigor? (2) How has the WI community's engagement with AIS8 journals developed over this period?

To answer these questions, we conducted a scientometric analysis of 1,817 peer-reviewed journal articles authored by 311 WI professors from Germany, Austria, Switzerland, and Liechtenstein between 2010 and 2020. The research methods used in these articles were classified into the research paradigms of positivism, interpretivism, and constructivism. Our findings reveal notable methodological diversity within the WI community, with research methods evenly distributed across the three paradigms. Furthermore, we observed an increasing number of AIS8 journal articles authored by WI professors, with a stable proportion employing constructivist research methods.

The study is structured as follows: First, we outline the research traditions in the WI and international IS communities and the assumptions of different IS research paradigms. Next, we describe our three-stage research methodology. Then, we present and reflect on four key findings on the WI community's methodological choices, the rigor of constructivist research, and publication outlets. Finally, we discuss the study's contributions, limitations, and directions for future research.

2 Background and Related Literature

The early preferences of research paradigms have significantly influenced development of IS research communities and their approaches to knowledge creation (Frank et al. 2008; Buhl et al. 2012). Both the WI community and the international IS community, led by North American IS scholars, emerged in the 1960s (Frank et al. 2008). Their distinct ties to IS practice and academia shaped their research traditions and paradigm choices (Frank et al. 2008). The WI community focused on constructivist approaches, prioritizing the development and design of IS artifacts (Heinrich and Riedl 2013; Österle et al. 2010). In contrast, the North American IS community initially favored positivist methods to study socio-technical and economic IS phenomena (Orlikowski et al. 1991; Chen and Hirschheim 2004). These preferences were influenced by the WI community's strong industry partnerships, which encouraged solution-oriented research, and the North American community's academic focus on theory building and development (Buhl et al. 2012; Österle et al. 2010).

The broader IS discipline encompasses diverse research paradigms to address the complex nature of socio-technical and economic IS phenomena. Positivism often aligns with research methods associated with the natural sciences, but

IS research adopts multiple paradigmatic perspectives to better understand and shape organizational IS use (Hassan and Mingers 2018). These paradigms, described as “meta-theoretical assumptions about the nature of science and society” (Hirschheim 1985, p. 1201), influence ontological assumptions and methodological choices. Positivism, inspired by the natural sciences, seeks to develop universal statements using standardized methods, as illustrated by the Unified Theory of Acceptance and Use of Technology (Venkatesh et al. 2003). In contrast, interpretivism and constructivism focus on understanding IS phenomena in specific contexts, acknowledging the subjective nature of knowledge creation (Klein and Myers 1999; Mingers 2003).

As summarized in Table 1, the positivist, interpretive, and constructivist paradigms differ in their ontological assumptions, goals, research methods, and limitations. The positivist paradigm assumes an objective reality that can be observed, analyzed and explained through causal relationships (Chen and Hirschheim 2004; Lee 2010). It contributes significantly to theory development, such as testing factors influencing technology adoption, but often neglects the complexities of social contexts (Sarker et al. 2019; Venkatesh et al. 2003). The interpretive paradigm, which

first gained prominence in European IS communities, particularly in the UK, before being adopted in North America, assumes that reality is socially constructed (Hassan and Mingers 2018). Its focus on qualitative research allows IS researchers to investigate complex phenomena, such as IS implementation and the interplay between IS, individuals, and organizations (Cecez-Kecmanovic et al. 2020). While it provides rich contextual insights, the generalizability of findings is limited to sample-based boundaries (Klein and Myers 1999; Conboy et al. 2012). The constructivist paradigm, central to the WI community, generates knowledge by developing and evaluating IT artifacts (Hevner et al. 2004). It faces challenges in balancing practical relevance with maintaining methodological rigor (Österle et al. 2010).

These paradigmatic differences have fueled methodological debates within and between IS research communities. In the international IS community, led by North American IS scholars, discussions have centered on the merits of positivist and interpretive approaches for studying socio-technical and economic IS phenomena (e.g., Sarker et al. 2019). Between communities, debates have focused on balancing theoretical contributions with practical relevance. These preferences influenced publication

Table 1 Traditional research paradigms in the IS and WI communities

	Positivism	Interpretivism	Constructivism
Ontological assumption of knowledge generation	Assumes an objective, singular reality that can be observed and explained by causal relationships	Assumes that reality is subjective and constructed by individuals based on their experiences and social interactions	Assumes that knowledge is gained through social constructions and lived experiences
	The objective physical and social world exists independently of humans	Reality is shaped by human presence and influence	Knowledge is shaped by human presence and influence
Goal of knowledge generation	Aims to understand human and organizational behavior related to IS	Aims to understand human and organizational behavior related to IS	Aims to find effective solutions to practical challenges faced by IS practitioners
	Focuses on confirming structures, recording constant conjunctions of observable events, and identifying patterns to ensure rigor	Explorative investigations to understand how individuals and groups make use of IS	Creation of IS artifacts intended to solve identified organizational problems
Method of knowledge generation	Standardized measurement methods and statistical analysis	Open-ended data collection and interpretative analysis methods	DSR methods for the design of IS artefacts such as constructs, software, models, or methods
	Empirical-quantitative methods ^a	Empirical-qualitative methods	Empirical methods for validation of IS artefacts
Limitation of knowledge generation	Perceived lower focus on practical relevance due to a strong emphasis on theory building	Perceived lower generalizability due to contextual boundaries in data collection	Perceived lower rigor when systematic DSR processes or empirical validation are not applied
	Complex relationships in phenomena may remain unaddressed due to a priori fixed assumptions	Perceived lower rigor in qualitative data analysis compared to the statistical robustness of quantitative methods	Strong contribution to knowledge base rather than theory building

^aWhile positivism strongly relies on empirical-quantitative methods, it can also include qualitative studies, such as case studies for theory testing (e.g., Yin 2018)

strategies. The WI community established research outlets such as *Elektronische Datenverarbeitung* (1959) and *Wirtschaftsinformatik* (1990, later *Business & Information Systems Engineering*) to address both IS academics and practitioners. Meanwhile, the international IS community placed strong emphasis on theoretical contributions, shaping the development of the AIS8. However, the AIS8 journals display regional differences. MISQ and ISR, based in North America, emphasize empirical research, particularly positivist methods (Lyytinen et al. 2007). European journals such as EJIS, ISJ, and JIT, however, exhibit greater methodological diversity and include a larger proportion of interpretive research (Liu and Myers 2011; Avison et al. 2008). These distinctions highlight regional paradigmatic preferences, with North American journals leaning toward positivist approaches, while European journals support a broader range of research paradigms.

The post-2010 period represents a significant phase in the development of the WI community. The publication of the DSR memorandum (Österle et al. 2010) and discussions on balancing rigor with practical relevance (Winter 2008) coincided with the increasing globalization of IS research. This raised questions about how the WI community could maintain its traditional strengths while engaging more actively with international audiences (Buhl et al. 2012; Heinrich and Riedl 2013). Recent trends suggest that paradigmatic differences are now seen as complementary, enhancing both theoretical understanding and practical solutions (Baskerville et al. 2018). While the methodological evolution of the international IS community is well documented (e.g., Palvia et al. 2015; Mazaheri et al. 2020), little is known about how the WI community has adapted its methodological choices and publication strategies since 2010. This is especially relevant given the continued globalization of IS research. Understanding how the WI community balances its research traditions with international engagement can offer key insights into the broader evolution of IS research. This study addresses this gap by analyzing the research methods and publication strategies of the WI community from 2010 to 2020. It examines changes in the adoption of constructivist, positivist, and interpretive paradigms and evaluates the community's presence in high-impact IS journals, particularly the AIS8 journals. The next section outlines the methodology used for this analysis.

3 Methodology

To address our research questions, we conducted a descriptive analysis of the use of research methods and publication outlets in the WI community, comparable to earlier studies (e.g., Wilde and Hess 2007; Schreiner et al.

2015; Thiesse 2015). The analysis consisted of three phases: (1) collecting journal articles, (2) developing a classification scheme for research methods, and (3) classifying the articles. In the first phase, we collected journal articles published by professors¹ from the WI community between 2010 and 2020. These journal articles were sourced from two key outlets of the WI community: *Business & Information Systems Engineering* (BISE) and the *Proceedings of the International Conference on Business Informatics and Information Systems* (*Wirtschaftsinformatik* conference). In the second phase, we developed a research method classification scheme. This classification scheme, based on established methodological frameworks, was refined through expert consultations. It comprises 21 research methods categorized into the research paradigms introduced earlier. In the third phase, a team of doctoral students and assistants classified the journal articles using the classification scheme. We ensured consistency through thorough examination and assessed intercoder reliability. After compiling the datasets, we conducted statistical analyses using the R programming language (version 4.2.3). Figure 1 provides an overview of the research methodology, which is detailed below.

3.1 Phase 1: Data Collection

In the first phase, we compiled two comprehensive datasets to examine the methodological development of the WI community and its publication trends in AIS8 journals. For the first dataset, we identified authors from the WI community, specifically WI professors from German-speaking countries (Austria, Germany, Switzerland, and Liechtenstein). We focused on WI professors due to their pivotal role in shaping their community, as demonstrated by the DSR memorandum (Österle et al. 2010). Their autonomy in choosing research topics, paradigms, methods, and publication outlets significantly influences the direction and standards of research within the WI community (Frank et al. 2008). We collected articles published by WI professors between 2010 and 2020 in two major outlets: the journal *Business & Information Systems Engineering* (BISE) and the *Proceedings of the International Conference on Business Informatics and Information Systems* (*Wirtschaftsinformatik* conference). These outlets are highly influential in the WI community (Buhl et al. 2012).

¹ We define professors as scholars who hold a full professorship position with an independent organizational unity at a university, typically characterized by leadership of their own institute, department, or chair. This definition excludes junior faculty positions such as assistant or associate professors, as these roles traditionally do not entail the same degree of institutional autonomy in research direction and methodological choices within the German-speaking university system.

Fig. 1 Three-stage research methodology

	Goal	(Re)source	Outcome
Phase 1 Data Collection and Creation of Two Datasets	Identification of Authors from WI Community	BISE Journal/ WI Conference	227 WI Professors
	Retrieval of Journal Articles of WI Professors	WoS Core Collection	1,817 Journal Articles (Dataset 1)
	Identification of AIS Basket of Eight Articles	WoS Core Collection	3,068 Journal Articles (Dataset 2)
Phase 2 Development of Research Methods Classification Scheme	Aggregation of Research Methods	Wilde & Hess (2007), Mazaheri et al. (2020)	29 Distinct Research Methods
	Creation of a Classification Scheme (Coding Manual)	Schreiner et al. (2015)	Classification Scheme based on Research Method Category
Phase 3 Classification of Journal Articles	Training of Coder for Classification	Workshops on Research Methods	Trained Coders based on Classification Scheme
	Pre-Classification (Method Category, Relevance to IS)	Barki et al. 1993, Córdoba et al. 2012, Coding Manual	Classified Articles Based on Research Method Category
	Final Classification of Journal Articles	Classification Scheme	Classified Articles Based on Individual Research Method(s)

A targeted Web of Science (WoS) search on 5 September 2021, using criteria such as journal section, addresses from German-speaking countries, and publication dates from 2010 to 2020, yielded 439 articles with 839 authors. After reviewing duplicates and verifying affiliations, we identified 227 WI professors holding full professorships during the study period. We also collected articles from the Wirtschaftsinformatik conference via AIS eLibrary on 7 September 2021. Using a search string targeting German-speaking countries and the publication period 2010 to 2020, we identified 627 articles with 1,268 authors. After applying the same criteria, an additional 84 WI professors were identified.

In the next step, we retrieved all journal articles authored by the identified WI professors. We conducted extended searches on the WoS Core Collection on 7 October 2021, and 14 March 2022, to collect English-language journal articles published by these WI professors between 2010 and 2020. Using the field “Author” and the Boolean operator OR, we initially identified 3,915 articles. After removing duplicates and filtering for the publication period, the dataset was reduced to 3,549 articles. Further filtering to include only items classified as “Journal” and “Article” refined the dataset to 3,002 articles. To align with prior scientometric analyses (e.g., Schreiner et al. 2015), we assessed whether the articles focused on the study of IS in organizations or public administration,

consistent with the core identity of IS research (Barki et al. 1993; Córdoba et al. 2012). We excluded meta-papers without the research objective to study or develop IS, such as discussions of research methods or analyses of research trends, in order to focus on journal articles that applied specific research methods. We excluded meta-articles that did not aim to study or develop IS, such as those discussing research methods or analyzing research trends, to focus on articles applying specific research methods. This process resulted in a final sample of 1,817 journal articles.

To complement the first dataset, we created a second dataset for reference and comparison. This dataset included 3,068 research articles published in AIS8 journals between 2010 and 2020. The articles were identified via WoS on 23 May 2023. Unlike the first dataset, this dataset included all research articles from AIS8 journals, regardless of whether they were authored by WI professors. Only articles classified as the document type “Article” were included. As with the first dataset, meta-articles were excluded to maintain focus on the study’s objectives. This approach expanded the statistical analysis, offering a broader view of research trends in the WI community during this period.

3.2 Phase 2: Development of Research Method Classification Scheme

The second phase focused on developing a detailed classification scheme to categorize the identified journal articles from the WI community. The goal was to develop a classification scheme that reflects the diversity of research paradigms and methods in the WI community while aligning with those used in prominent IS journals like *AIS8*. We initially identified 29 research methods based on research paradigms and methodological frameworks from prior studies (e.g., Chen and Hirschheim 2004; Wilde and Hess 2007; Mazaheri et al. 2020). To ensure the validity and usability of the classification scheme, we conducted a pilot test on 10% of the articles, randomly selected from our final dataset. During the pilot test, we consulted two WI professors and one computer science professor with broad expertise in positivist, interpretive, and constructivist paradigms. Their feedback, gathered through multiple consultation sessions, helped refine the classification scheme.

The pilot test revealed challenges in classifying journal articles due to the large number of research methods. This was further complicated by articles that did not clearly specify the methods used. To address these issues and create a more robust classification scheme, we made several adjustments. First, we reduced the number of research methods by grouping together those that were difficult to distinguish or not explicitly linked to a specific method, such as literature review and literature analysis. Second, each method was first categorized into one of four paradigms: positivist, interpretive, constructivist, or residual. Rarely used research methods were categorized under “residual research methods.” The journal article was then classified to a specific research method. These steps significantly simplified the classification process and reduced the error proneness.

Constructivist research methods required further differentiation, as prior scientometric studies did not address individual design-oriented methods (e.g., Wilde and Hess; Mazaheri et al. 2020). We categorized journal articles based on the IS artifacts developed in their studies. Commonly developed IS artifacts include systems, software, methods, and models (Winter 2008; Hevner et al. 2004). To simplify classification, we grouped systems with software and methods with models, as these distinctions were often unclear in the journal articles of the final dataset. Additional artifacts, such as design principles, business model frameworks, and tools like NeuroIS tools (e.g., Bitzer et al. 2016; Astor et al. 2013), were categorized under general DSR. Rarely developed artifacts or other DSR approaches were grouped into “other constructivist research methods.”

In the end, our systematic and iterative process led to a consolidated classification scheme with four categories: positivist, interpretive, constructivist, and residual research methods, as illustrated in Fig. 2. The research methods are assigned to each category based on the assumptions of knowledge generation of their associated research paradigm. The category “positivist research methods” includes research methods using standardized empirical measurement and statistical analysis. The category “interpretive research methods” focuses on empirical-qualitative research methods to understand social contexts and meanings. The category “constructivist research methods” encompasses research methods for developing and evaluating IS artifacts. The category “residual research methods” covers research methods that do not align with the other three paradigms, such as argumentative-deductive approaches or less common methods (cf. Schreiner et al. 2015). Precise definitions were established for each method to guide the classification process. These definitions formed the basis for a comprehensive coding manual. Appendix 1 (available online via <http://link.springer.com>) provides detailed descriptions of the research methods and their definitions.

3.3 Phase 3: Classification of Journal Articles

In the third and final phase, a team of three doctoral students and three student assistants classified the journal articles. To prepare the student assistants, comprehensive workshops were held to familiarize them with the research methods in the classification scheme (Fig. 2). The coding manual was central to their training, ensuring a clear understanding of the research methods and consistent application of the classification scheme. Rigorous training and joint coding sessions with the doctoral students further ensured classification consistency.

The classification process began with the doctoral students categorizing the articles by research paradigm. This ensured that each article was represented in the classification scheme and could be assigned to a research method. Titles, abstracts, and methodology sections were reviewed for classification. In some cases, the entire text was examined to confirm the article’s relevance. Articles were assessed based on the IS discipline’s focus on studying IS phenomena, such as the investigation, design, or use of information systems in organizations or public administration (Barki et al. 1993; Córdoba et al. 2012). These criteria served as a benchmark for determining relevance. Relevant articles were then classified by research method. Subsequently, journal articles were classified by coding research methods based on sentence-level evidence within the articles that explicitly mentioned the use of a specific method. Some articles employed multiple methods. In such

Fig. 2 Research methods classification scheme

Research Methods Classification Scheme based on Research Paradigms	
Positivist Research Methods • Survey • Online Experiment • Field Experiment • Laboratory Experiment • Secondary Data Analysis • Social Network Analysis • Other Positivist Research Methods	Interpretive Research Methods • Content Analysis • Grounded Theory • Case Study • Interview/ Delphi study • Other Interpretive Research Methods
Constructivist Research Methods • General DSR • Systems/ Software • Method/ Model • Other Constructivist Research Methods	Residual Research Methods • Mathematical Modelling/ Simulation • Literature Review/ Analysis • Conceptual Framework • Speculation/ Commentary • Other Research Methods

cases, articles were categorized based on the sequence in which the methods were mentioned. To maintain clarity and specificity, each article was assigned to a maximum of two methods, with the first method used for statistical analyses.

To support our statistical analysis of rigor in constructivist research methods, we introduced two proxies for DSR rigor. These were guided by the DSR principle of “application of rigorous methods in both the construction and evaluation of design artifacts” (Hevner et al. 2004, p. 83). The first proxy was a binary variable indicating whether the article explicitly followed a systematic DSR process, such as those proposed by Hevner et al. (2008) or Brendel et al. (2021). This captured the explicit designation of DSR. The second proxy was another binary variable reflecting empirical validation of IS artifacts, such as through surveys or experiments, regardless of whether DSR was explicitly mentioned. Both proxies were informed by prior studies on DSR rigor (e.g., Winter 2008; Österle et al. 2010; Peffers et al. 2018).

Throughout the classification process, the doctoral students provided continuous feedback to the student assistants to ensure the quality and accuracy of the classification. To further enhance reliability and objectivity, the doctoral students reviewed the sentence-level evidence used to support the classification of individual journal articles. Intercoder-reliability was assessed using a random sample of 100 articles (5.5% of the dataset). The classification of positivist research methods achieved “almost perfect” agreement with a Cohen’s Kappa of 0.85 (Landis and Koch 1977). Constructivist and interpretive methods showed slightly lower, yet acceptable, reliability with values of 0.78 and 0.81, respectively.

4 Results

In this section, we present our primary descriptive analyses based on two comprehensive datasets (see Sect. 3.1). The first dataset includes 1,817 journal articles published between 2010 and 2020 by professors from the WI community. These articles span 416 journals and involve 2,981 researchers as (co-)authors, of whom 311 are WI professors. This dataset offers insights into the evolution of research paradigms within the WI community in order to answer our first research question. The second dataset consists of 3,068 journal articles from all eight AIS8 journals, with 202 journal articles involving WI professors as (co-)authors. It provides insights into how the WI community engages with leading international outlets while maintaining methodological diversity, addressing our second research question. Together, these datasets provide a robust foundation for understanding how the WI community has adopted different research paradigms and engaged with the broader IS research community.

4.1 Development of Research Methods Use Within the WI Community

First, our analysis shows vibrant methodological diversity within the WI community from 2010 to 2020, with significant contributions across all research paradigms. The absolute number of journal articles increased by 117.4% during this period, from 109 articles in 2010 to 237 in 2020. This growth reflects the WI community’s increasing research activity and balanced use of methods across paradigms: constructivist research methods (497 articles or 27.4%), positivist research methods (468 articles or 25.8%), and interpretive research methods (313 articles or

17.2%). This indicates the WI community's commitment to methodological diversity in knowledge generation. Figure 3 illustrates the development of this diversity over the time of our study period, showing the composition of categories of research methods used across all classified articles ($n = 1,817$).

The use of research methods remained stable over time, with some fluctuations. Positivist research methods varied and increased by 9.6 percentage points, rising from 22.9% in 2010 to 32.5% in 2020. Constructivist research methods were consistently used, averaging around 30% until 2019, but dropped to 19.8% in 2020. Interpretive research methods steadily contributed to the research of the WI community, increasing slightly from 19.3% in 2010 to 19.8% in 2020. In terms of absolute frequency, constructivist research methods, such as the development and empirical validation of methods and models, were the most frequently used as can be found in Appendix 2. Surveys as positivist research methods and case studies as interpretive ones ranked third and fourth respectively. This balanced distribution indicates that the WI community maintained its focus on constructivist research methods while incorporating a variety of other approaches.

4.2 Development of the Scientific Rigor of Constructivist Research Methods

Our analysis reveals both methodological diversity and increasing rigor in constructivist research methods. The absolute number of journal articles using constructivist research methods grew steadily, from 34 in 2010 to 40 in 2015, and to 47 in 2020. This growth reflects the WI community's ongoing commitment to its traditional focus on constructivism. More importantly, these contributions have become more methodologically robust, as evidenced by two key indicators of rigor in constructivist journal articles ($n = 497$) in Fig. 4.

First, the explicit adoption of systematic research processes has increased significantly. The percentage of journal articles using constructivist research methods and adhering to established DSR frameworks increased from 32.4% in 2010 to 53.2% in 2020, marking a rise of 20.8 percentage points. This demonstrates the WI community's stronger emphasis on methodological rigor and the importance of systematic, iterative processes in its constructivist research endeavors (Österle et al. 2010). Second, empirical validation of IS artifacts has become almost universal. The share of constructivist articles incorporating empirical validation increased from 70.6% in 2010 to

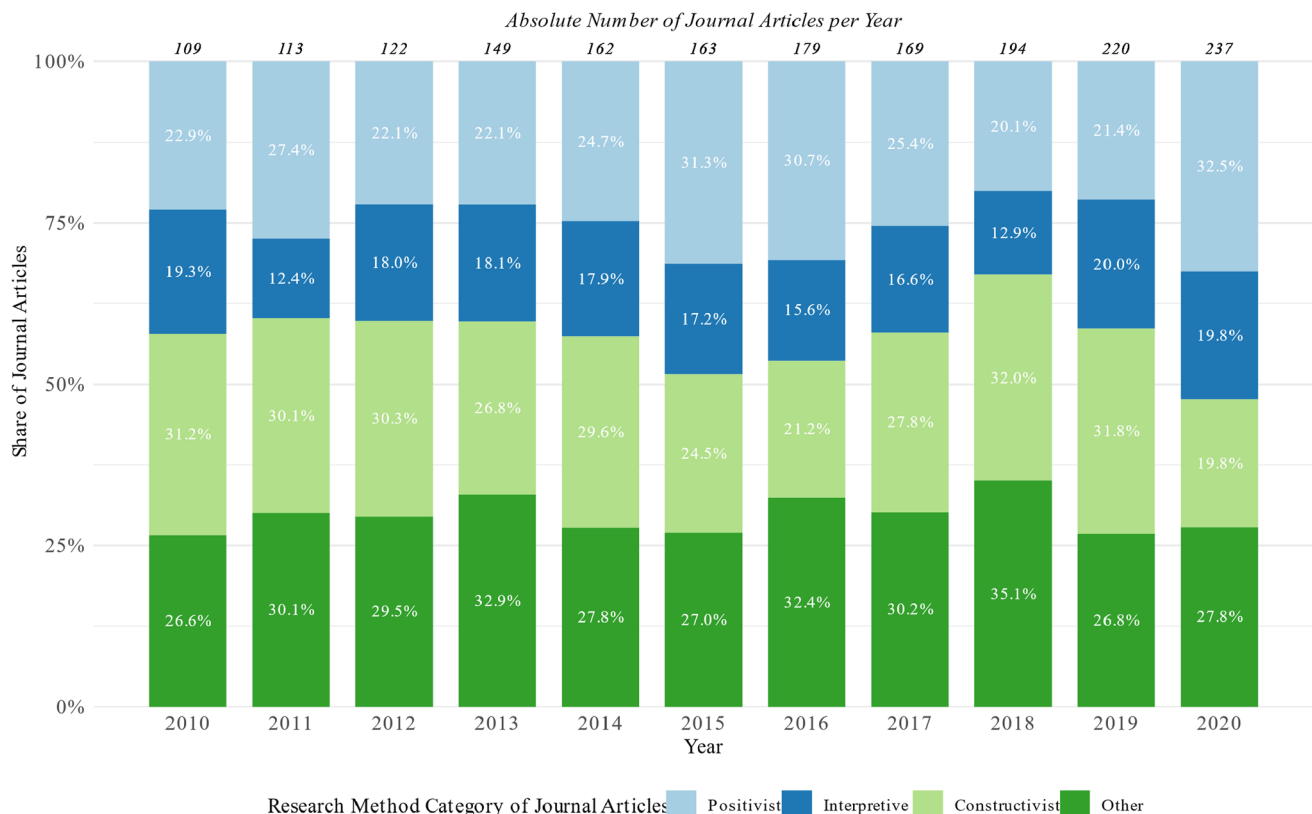


Fig. 3 Composition of research methods in WI community journal articles from 2010 to 2020 ($n = 1,817$)

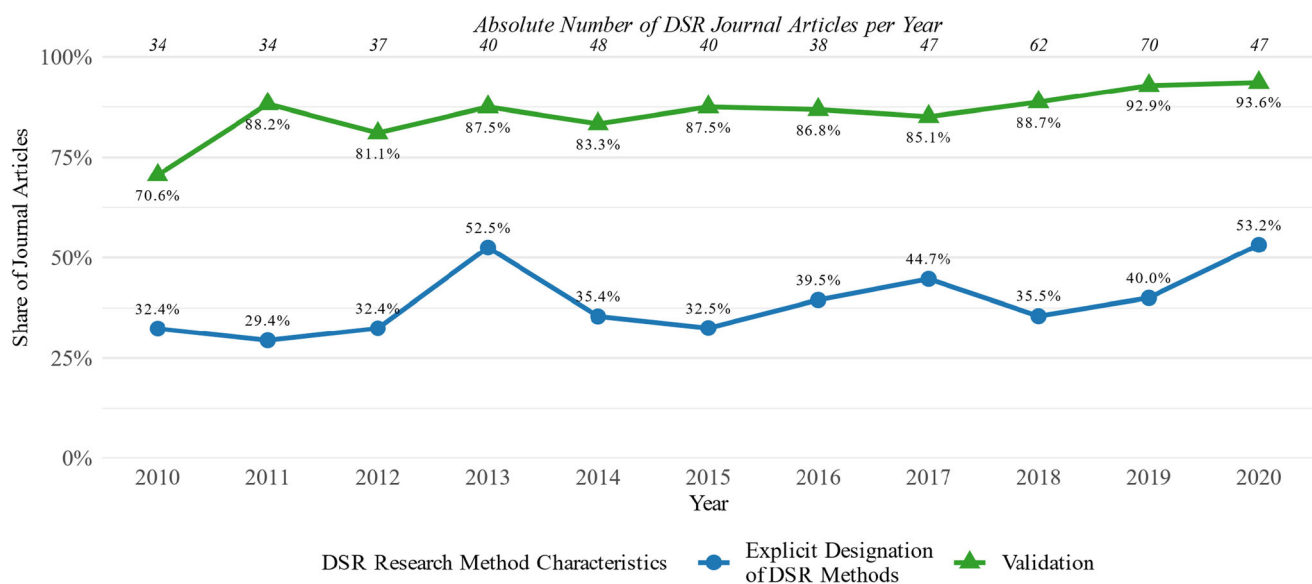


Fig. 4 Development of explicit designation and validation of DSR from 2010 to 2020 ($n = 496$)

93.6% in 2020, a 23.0 percentage point rise. This shows that the WI community has successfully enhanced the rigor of its traditional approaches while maintaining practical relevance. Nearly all constructivist research now adheres to established DSR guidelines, such as those proposed by Hevner et al. (2008) and Brendel et al. (2021).

4.3 Development of Journal Articles Published in AIS8 Journals

To assess the WI community's visibility in leading international IS journals, we analyzed all AIS8 journal articles ($n = 3,086$) published between 2010 and 2020. Figure 5 shows the WI community's methodological diversity and growing engagement with international journals. Our analysis shows both quantitative growth and qualitative diversity in the WI community's contributions to AIS8. The absolute number of WI publications in AIS8 journals increased by 314.3%, from 7 articles in 2010 to 29 in 2020. Their share of all AIS8 publications also grew, from 2.6% (of 270 articles) in 2010 to 9.3% (of 313 articles) in 2020. This growth is remarkable given the relatively small size of the WI community compared to larger IS research communities, such as those in North America. It reflects the increasing influence of German-speaking countries in the international IS discipline. As shown in Appendix 3, the WI community published 202 articles in AIS8 journals compared to 155 articles in BISE over the same period.

4.4 WI Community's Methodological Diversity in International IS Journals

Figure 6 illustrates the relative share of AIS8 journal articles published by the WI community ($n = 202$), categorized into positivist, interpretive, constructivist, and other research methods. The WI community's publications in AIS8 journals demonstrate a wide range of research methods across all paradigms. From 2010 to 2020, the share of positivist research methods is 45.5%, followed by interpretivist methods at 24.8% and constructivist methods at 12.4%. This distribution underlines the methodological diversity of the community and its ability to publish research across different paradigms in leading international IS journals.

The distribution of these research methods has remained relatively stable over time. Positivist research methods have consistently held a significant share, increasing from 42.9% in 2010 to 48.3% in 2020, while the absolute number of published AIS8 articles grew substantially by 314.3%, from 7 in 2010 to 29 in 2020. Publications with interpretive and constructivist research methods also maintained a steady representation, showing that the WI community engages with international IS journals while preserving methodological diversity.

This trend contrasts with the WI community's traditional outlet, BISE, where constructivist research methods have historically been more prominent (see Appendix 4). Rather than signaling a shift in focus, this indicates the WI community's ability to pursue different publication strategies. The WI community successfully publishes research in both international and close-to-home outlets, demonstrating its ability to engage with various academic audiences

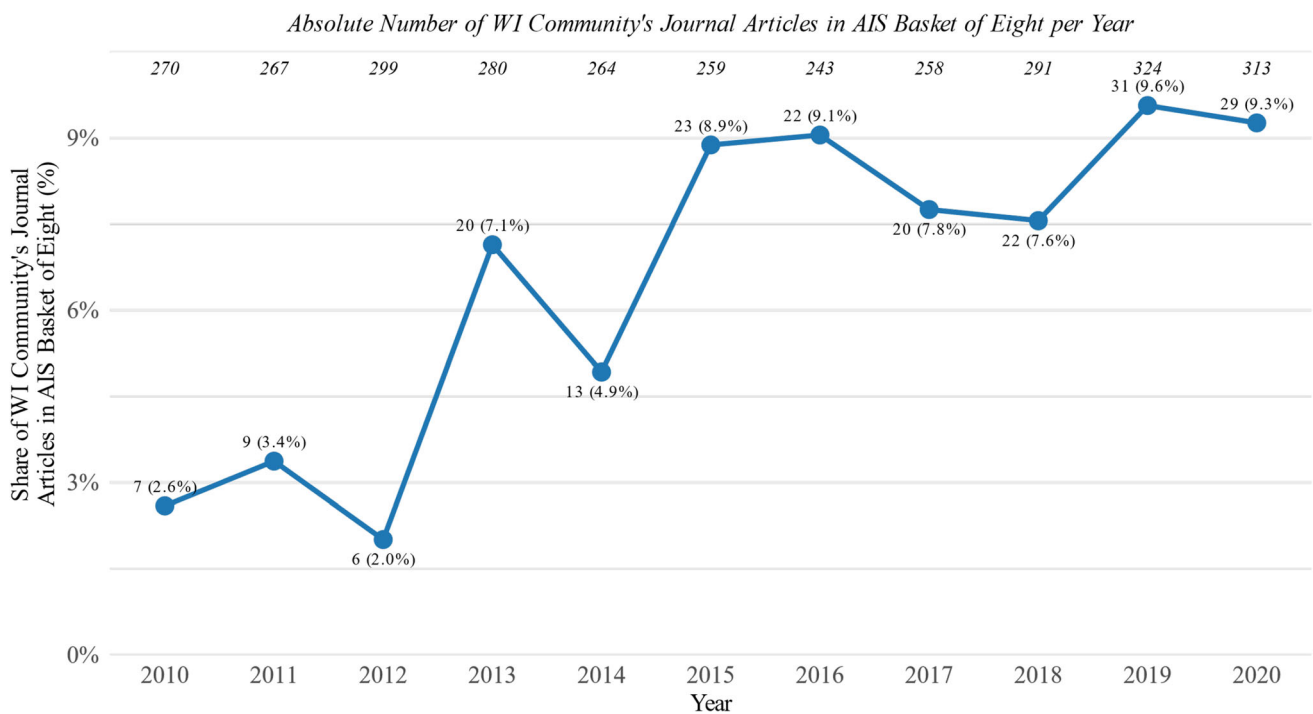


Fig. 5 Development of AIS8 articles published by the WI community from 2010 to 2020 ($n = 3,068$)

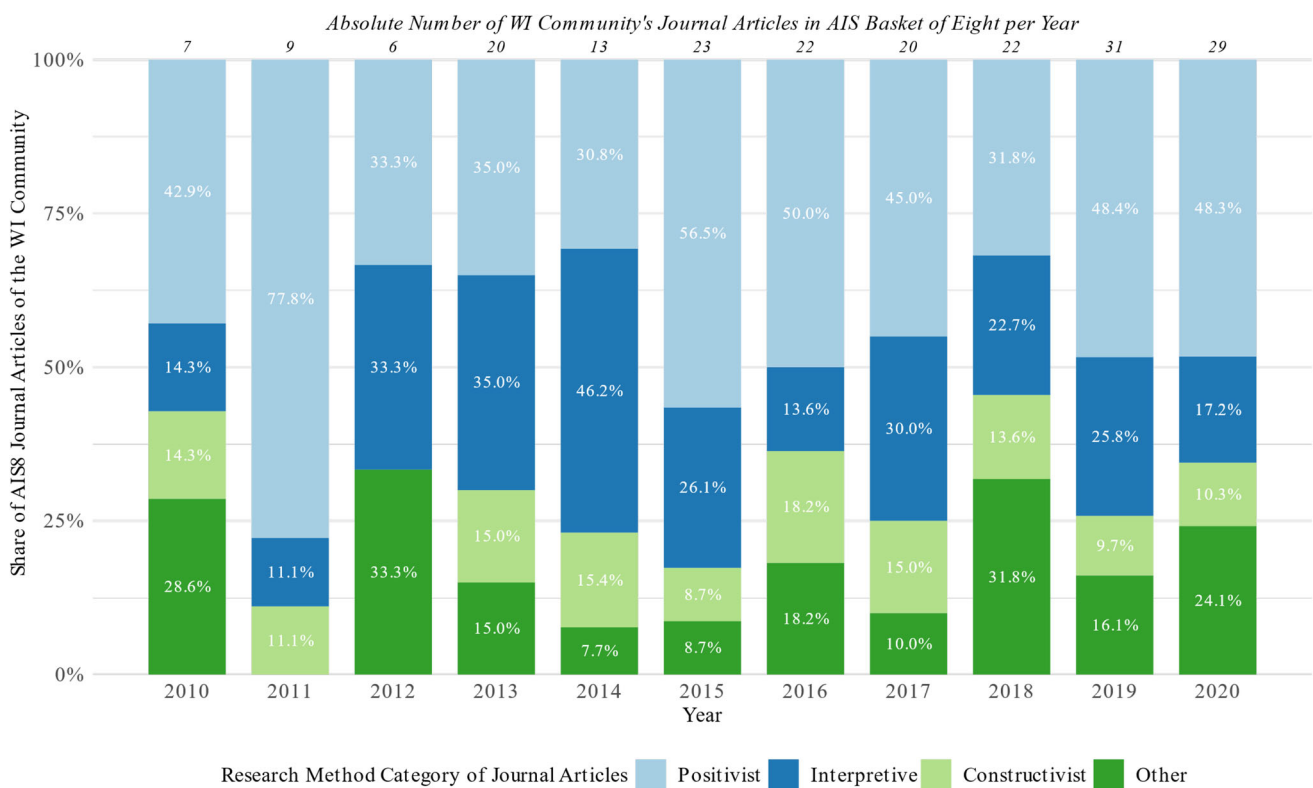


Fig. 6 Composition of research methods in AIS8 by the WI community from 2010 to 2020 ($n = 202$)

through diverse paradigmatic choices and research methods.

5 Discussion

This study aimed to investigate the state of the art in the WI community regarding its adoption of research paradigms and methods, methodological rigor of DSR, and presence in international IS outlets. To achieve this, we conducted a descriptive analysis of journal articles (co-)authored by WI professors between 2010 and 2020, gaining valuable insights into the WI community's research choices and publication strategies. Our findings are discussed at two levels: (1) status quo of research paradigms and methods, and (2) the WI community's engagement with international IS publication outlets.

5.1 Evolution of Research Paradigms and Methods in the WI Community

Our results reveal that the WI community has evolved into a mature research field, maintaining its traditional strengths while embracing a variety of research paradigms. It continues to use constructivist research methods in publications, while also successfully integrating positivist and interpretive approaches into its publication portfolio. This diversity remained consistent from 2010 to 2020, with only minor fluctuations, accompanied by a significant increase in overall research output.

The evolution of the WI community after 2010 has been viewed differently by scholars. Some raised concerns about a shift away from constructivist research methods (e.g., Österle et al. 2010), while others saw diversification in paradigmatic choices as essential for progress (e.g., Buhl et al. 2012; Heinrich and Riedl 2013). Heinrich and Riedl (2013, p. 34) noted that WI scholars often prioritize developing IT artifacts over theoretical studies of IS behavior, though both are valued within the community. Despite these differing perspectives, the WI community has moved beyond this apparent dichotomy in knowledge creation. It has maintained its constructivist foundation while achieving methodological maturity. WI scholars now adopt multiple paradigms, continuing to develop IT artifacts within a constructivist research framework while increasingly using positivist and interpretive approaches to study IS phenomena. This diverse methodological approach supports the dual IS research goals of explanation and design, avoiding a narrow focus on IS phenomena (Hassan and Mingers 2018; Orlikowski 1991). After 2010, the WI community successfully balanced its strong constructivist traditions with the adoption of other research

paradigms. This progress challenges earlier perceptions of its methodological capabilities (e.g., Lyytinen et al. 2007).

An important advancement is the improved methodological rigor in constructivist research. Earlier DSR studies often lacked clear methodological frameworks (Becker et al. 2009). Recent DSR research shows significant progress, particularly in systematic processes and empirical validation for developing IS artifacts. This demonstrates the WI community's response to calls for greater rigor (e.g., Österle et al. 2010) while retaining practical relevance in its research endeavors. The increased empirical validation of artifacts underscores the community's ability to balance theoretical and practical contributions.

5.2 Evolution of Publication in AIS8 by the WI Community

Regarding the second research question, our findings reveal a significant rise in the WI community's contributions to AIS8 journals. This growth is particularly striking given the relatively small size of the WI community compared to larger IS research communities, such as those in North America (Thiesse 2015). The trend accelerated from 2015 onward, reflecting increased international engagement. This development aligns with broader changes, such as the transition of the BISE journal to English, which reduced language barriers and facilitated global dissemination.

The methodological composition of these publications underscores the WI community's adaptability. Constructivist research methods maintained a consistent presence in AIS8 journals throughout the study period. This illustrates the WI community's ability to effectively present design-oriented research to international audiences. It also suggests growing recognition of constructivist research and DSR in leading IS journals, supported by the WI community's commitment to both rigor and practical relevance. Similar trends were noted by Mettler and Sunyaev (2023), who highlighted the increasing visibility of European IS scholars in AIS8 journals and the value of paradigmatic diversity in high-impact research.

Moreover, the WI community has increasingly adopted positivist and interpretive research methods in its AIS8 publications, aligning with the recognized prominence of these approaches in leading IS journals (e.g., Lyytinen et al. 2007; Mazaheri et al. 2020). Its growing presence in AIS8 journals reflects the community's ability to meet international research standards through methodological diversity. This development has likely been influenced by global ranking systems (van der Aalst et al. 2023) or the rise in international co-authorships. Despite these trends, the WI community has successfully balanced differing paradigmatic choices, such as the emphasis on positivist

and interpretive research methods in some journals, while maintaining its tradition of constructivist research methods in BISE.

5.3 Limitations and Further Research

As with any research, our study has certain limitations. While we achieved high intercoder-reliability, challenges in data collection and classification remain. Our results are robust but do not fully capture the emergence of DSR in publication outlets, partly due to editorial discretion within AIS8 journals. Regarding the rigor of DSR, our binary measures, i.e., the explicit designation of DSR methods and the empirical validation of the developed artifact, provide a basis but may not fully reflect the complexity of rigor of the different studies. Consistent with Becker et al. (2009), who observed the lack of explicit methodological frameworks in many DSR journal articles, we acknowledge that variations in rigor depend on how processes and validations are implemented. Future research could refine these measures to capture rigor more comprehensively. Our method classification also has limitations. There is no universally accepted framework for categorizing IS research methods, reflecting the field's diversity. Our categorization aligns with our goal of examining paradigmatic progress in the WI community but may not capture all methodological nuances.

Second, while focusing on the WI community in German-speaking countries provides detailed insights into its methodological preferences, it limits the generalizability of our results to other IS research communities, particularly in the broader European context. We recommend extending this analysis to other IS communities. Comparative studies extending beyond the WI and international IS communities could provide valuable insights into diverse research cultures and methodologies within the broader IS discipline, contributing to a more holistic understanding.

Third, our study aimed to descriptively map methodological trends in the WI community from 2010 to 2020, focusing on research methods. While comprehensive, this focus does not in depth explore trends within individual publication outlets or examine dimensions like research objects (e.g., IS artifacts in DSR studies). Future research could analyze specific journals or journal groups like AIS8 and examine how their published methods evolve and influence IS communities. Exploring under-examined aspects, such as the nature of research objects, would also provide novel insights into the IS discipline. A fresh analysis of recent trends could be particularly valuable given the growing emphasis on design science research in AIS8 journals.

Fourth, the role of individual scholars and editorial strategies in shaping methodological orientations and

research trends within the WI community remains under-researched. Investigating these influences could provide deeper insights into the drivers of methodological shifts. While this was beyond the scope of our study, future research should examine the contributions of individual scholars and journal policies in shaping the IS research landscape.

In summary, while our study has specific limitations regarding its focus and scope, these also provide opportunities for further investigation. We encourage IS scholars to build on our findings and dataset to conduct exploratory and comparative research that deepens our understanding of the complex, diverse field of IS research. To support this, we provide access to our dataset available for future research.

6 Conclusion

The results of our study show that the WI community is increasingly adopting positivist methods while maintaining its strong commitment to the constructivist paradigm. This underscores the WI community's growing international orientation while reinforcing its core identity through the enhanced rigor of constructivist research methods. The WI community today demonstrates strategic alignment with international IS research standards while preserving its unique focus. The increase in positivist articles published in AIS8 journals, alongside the evolving rigor of DSR, reflects a strong and distinctive presence within the IS discipline. However, there are growing calls for greater inclusion of DSR in AIS8 journals, particularly given its relevance in addressing societal challenges and the digital transformation (Mettler and Sunyaev 2023). Balancing theoretical contributions with practical relevance is crucial for translating knowledge into actionable solutions to solve real-world problems. This underscores the increasing value of DSR in today's world. The trajectory of the WI community illustrates adaptability and a commitment to meaningful contributions to both IS academia and practice.

Building on these insights, we hope our study serves as a foundation for further research by scholars within the WI community and the broader IS discipline. We encourage further exploration of the evolving dynamics of research methods, particularly the interplay between positivist and constructivist approaches. Our findings create opportunities for comparative studies, offering a deeper understanding of how diverse IS research communities adapt and thrive while preserving their unique focus. We also hope this study motivates journals to promote greater methodological diversity and provide platforms where different research paradigms can coexist and complement each other. Journals could further encourage submissions that

blend positivist and constructivist research methods, fostering a comprehensive approach to IS research that balances rigorous academic inquiry with practical application. By supporting such initiatives, journals can play a critical role in shaping the future of IS research, ensuring it remains relevant, dynamic, and impactful in addressing the challenges of the digital age.

Supplementary Information The online version contains supplementary material available at <https://doi.org/10.1007/s12599-025-00934-6>.

Acknowledgements The authors would like to thank the department editor, the associate editor, and two anonymous reviewers for their excellent comments and suggestions, which have significantly improved the quality of this paper.

Funding Open Access funding enabled and organized by Projekt DEAL.

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