

March 2024

## Creativity in Information Systems Research: A Systematic Literature Review

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### Recommended Citation

Simonovič, M., Popovič, A., & Černe, M. (2024). Creativity in Information Systems Research: A Systematic Literature Review. *Economic and Business Review*, 26(1), 45-60. <https://doi.org/10.15458/2335-4216.1331>

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## REVIEW ARTICLE

# Creativity in Information Systems Research: A Systematic Literature Review

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## Abstract

For more than six decades, creativity has been the cornerstone of diverse scientific disciplines, including psychology, sociology, and organizational behavior (OB) studies. Its fundamental role in guiding business prospects, driving development, and fueling economic growth has made it an essential research theme in many fields. Yet, despite its importance, scholars within the information systems (IS) discipline have highlighted the significant lack of attention paid to this concept in their research. The transformative role creativity plays in contemporary business environments, along with the ever-present need to innovate, compete, and grow, sparked our curiosity. Is creativity still an understudied area in the IS discipline, as it was 10 years ago? Our goal was not simply to examine the current state of creativity studies within the IS field, but to chart its evolution from 2010 to the present day. Through a comprehensive systematic literature review, we scrutinized papers from prestigious journals and proceedings of acclaimed conferences within the IS field. The findings map out the trajectory of creativity studies, yet also point to an emerging research gap. Accordingly, the paper provides invaluable insights into future research directions, emphasizing the need to fill the creativity studies void within the discipline of IS.

**Keywords:** Creativity, Information systems, Business analytics, Literature review, Academic research

**JEL classification:** M15, O32

## Introduction

The increasingly dynamic and competitive business landscape, marked by digitalization (Legner et al., 2017; Parviainen et al., 2017; Tomat & Trkman, 2019) and shifting consumer needs and habits, means the call for creativity today resonates stronger than ever (Amabile, 1988; Woodman et al., 1993). This demand for creativity has intensified, with a view to catalyzing the pursuit of innovation, competitiveness, and growth (Amabile et al., 1996; Kaufman & Sternberg, 2010). As the engine that propels the generation of novel and purposeful products or services (Woodman et al., 1993), creativity has become integral to modern business practices (Amabile, 1998). This extends beyond creating unique goods or services to cultivating competitive advantages that are difficult

to replicate (Müller-Wienbergen et al., 2011). As such, understanding, identifying, and fostering creativity (Schwarz et al., 2013; Siemon et al., 2016) have become critical business imperatives and vital areas of academic inquiry.

A decade ago, seminal works by Seidel et al. (2010) and Muller and Ulrich (2013) presented extensive literature reviews, dissecting the concept of creativity within the IS discipline. While other disciplines such as psychology, sociology, and OB studies dedicate entire journals to creativity studies, Seidel et al. (2010) and Muller and Ulrich (2013) both echoed Couger et al.'s (1993) observation that creativity continues to be distinctly under researched within the discipline of IS. Seidel et al. (2010) reviewed 27 papers analyzing creativity from the Senior Scholars' Extended Basket of Journals (published between 1977

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Received 18 August 2023; accepted 6 November 2023.  
Available online 5 March 2024

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<https://doi.org/10.15458/2335-4216.1331>

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and 2009), which represented a mere 0.5 percent of all papers in the journals considered. Muller and Ulrich's (2013) broader review incorporated the Association for Information Systems (AIS) list of management of information systems journal rankings and proceedings from the ACM Conference on Creativity and Cognition, unearthing 88 creativity-related papers (published between 1998 and 2011).

These reviews spotlighted an enduring gap within IS creativity studies, notwithstanding the recognized influence of creativity on the development of IS and information technology (IT) and its impact on the creative performance of individuals and groups (Muller & Ulrich, 2013; Seidel et al., 2010). Both reviews concluded by strongly pleading for future creativity research within the IS discipline, in particular as regards the 4Ps of creativity (person, product, process, press; Rhodes, 1961), research dealing with person- and press-related concepts (Seidel et al., 2010), and understanding of the creative process (Muller & Ulrich, 2013) in different socio-technical contexts.

Given this background, our literature review seeks to explore whether creativity remains a neglected research area (Couger et al., 1993) within the discipline of IS and addresses two research questions: (1) How is creativity conceptualized and understood in the IS discipline; and (2) how has it been examined and researched in the last decade? We aim to offer a comprehensive synthesis of the literature based on three main points. First, by extending Seidel et al. (2010) and Muller and Ulrich's (2013) reviews with the review of works published between 2010 and 2022. Second, by adding the review of proceedings from esteemed conferences in the IS discipline. Third, by analyzing the understanding of creativity in the IS discipline and detecting promising avenues for future research as well as emerging gaps in the literature.

Our research contributes to studying field by complementing earlier literature reviews with an analysis of works published in the last decade and a review of conference contributions from relevant conferences in the research area. Finally, the results of the presented analysis will allow us to confirm or reject the claim that creativity is a poorly researched phenomenon in the IS discipline (Couger et al., 1993; Muller & Ulrich, 2013; Seidel et al., 2010).

## 1 The literature search and analysis process

### 1.1 Selection of relevant literature

To accomplish our research inquiries, the literature search primarily focused on leading academic journals, an approach reflecting the insights of Seidel et al. (2010) that showed the significant influence of such

journals on the formation of academic disciplines. Our selection was guided by the Senior Scholars' List of Premier Journals, as determined by the AIS, which in February 2023 constituted a well-curated, comprehensive, and impactful catalogue of 11 journals (details in Table 1). This selection process parallels that employed by Seidel et al. (2010) in their review, which also consulted the Senior Scholars' Extended Basket of Journals.

Moreover, following vom Brocke et al.'s (2009) advice, our literature survey was not restricted to articles published in academic journals, but included proceedings from reputable conferences as well (vom Brocke et al., 2009). We focused on AIS conferences (in alphabetical order: Americas Conference on Information Systems—AMCIS, European Conference on Information Systems—ECIS, International Conference on Information Systems—ICIS, and Pacific Asia Conference on Information Systems—PACIS), as the Association's purpose is to promote the advance of knowledge and excellence in the practice and study of IS. We also analyzed works presented in the oldest and well-recognized conference in the studied field—the Hawaii International Conference on System Sciences (HICSS). These proceedings are peer-reviewed and serve as accurate barometers of current research trends, which means they add substantial value while exploring the literature in the IS discipline.

To add to the insights from the literature reviews detailed in the introduction, we conducted an expansive search using the term “creativity” in the titles, keywords, and abstracts of journal and conference papers published between 2010 and 2022. We thereby identified 40 papers of relevance in the Senior Scholars' List of Premier Journals, as shown in Table 1, along with 66 papers from noteworthy conferences in the IS field, sourced from the AIS eLibrary (with the following specific numbers from each conference: 24 from ICIS, 11 from HICSS, 16 from AMCIS, 5 from ECIS, 9 from PACIS, and 1 from ACIS, where the last one was included due to its topical relevance).

The findings of our rigorous literature search support the observation that research focusing on creativity in the IS field remains underrepresented in the academic canon. A mere 0.51 percent of the papers published in the selected journals in the period under scrutiny deal with creativity (evaluated by considering all relevant hits while searching in the Senior Scholars' List of Premier Journals—40—and all items—7798—published in these journals in the observed period between 2010 and 2022). Although the representation of specific themes in the IS field is known to be diverse and expansive, our findings give

Table 1. Search results from the Senior Scholars' List of Premier Journals.

Journal	Journal items <sup>(a)</sup>	Relevant hits	Databases/websites searched
Decision Support Systems	1966	6	ScienceDirect
European Journal of Information Systems	603	4	Taylor & Francis Online
Information & Management	1135	9	ScienceDirect
Information and Organization	242	2	ScienceDirect
Information Systems Journal	511	2	Wiley Online Library
Information Systems Research	996	3	Informa PubsOnline
Journal of the AIS	537	4	AIS eLibrary
Journal of Information Technology	384	1	Sage Journals
Journal of MIS	606	6	Taylor & Francis Online
Journal of Strategic Information Systems	420	0	ScienceDirect
MIS Quarterly	398	3	JSTOR
Total	7798	40	

<sup>(a)</sup>All items published between 2010 and 2022 (papers, editorial comments, etc.).

considerable weight to the claimed need for a more concentrated, systematic exploration of creativity in future IS research.

### 1.2 The analysis process and results

The identified papers were meticulously evaluated utilizing the parameters shown in Table 2, which were partly derived from the methods employed by Seidel et al. (2010). We were also interested in understanding how the authors viewed creativity in order to more robustly conceptualize creativity in the IS discipline. Further, analyzing concrete constructs that had been studied as creativity and identifying the tools, IT, or IS observed drove us to distinguish different ways of inquiring into creativity in the studied field. This analytical framework was designed to ensure comprehensive and systematic scrutiny of the selected literature.

The analysis was carried out in two rigorous phases, each providing further depth in the

evaluation. Each paper was independently assessed against all parameters during the first phase, to establish a broad overview of the literature. In this phase, we also excluded two journal papers and four conference papers (bringing down the initial 112 items to the final 106 relevant items) from further consideration since they did not treat creativity in a visible and detailed manner. The second phase involved analyzing each parameter by focusing on the corresponding literature identified in the initial phase. We revisited each work according to the specific characteristics of the parameter and reevaluated it if needed. This iterative approach ensured the utmost accuracy and depth in our examination.

The 4Ps perspective of studying creativity allowed us to better understand the view of creativity adopted by authors while studying the phenomenon. The analysis reveals that creativity is mostly studied from the person and product perspectives, as embraced in two thirds of cases. We identified some studies employing the process perspective, whereas

Table 2. Overview of analytical parameters.

Parameter	Component	Description
The 4Ps perspective of creativity <sup>(a)</sup>	person, process, product, press	Identifying the appropriate perspective for studying creativity with respect to Rhodes' (1961) 4Ps model of creativity
The perspective of studying creativity <sup>(b)</sup>	individual, group, organization, market	Identifying the appropriate perspective from which the phenomenon was studied and analyzed in the paper, understood as a broader view on the entire work, vs. the level of analysis of the research conducted
The view on creativity adopted by authors	outcome, process, a required feature	Identifying the authors' studying position by evaluating whether creativity was understood as an outcome or process or a required feature in the authors' definition or explanation of the phenomenon
The specific construct or concept that was studied as creativity	(transcribed from the paper)	Identifying the main construct or concept representing the researched phenomenon analyzed in the paper
The artefact analyzed	(transcribed from the paper)	Identifying the tool, IT, or IS analyzed in the paper
The role of the creativity construct or variable (concept) in the research <sup>(c)</sup>	dependent, independent	Identifying the role of the analyzed construct or variable (concept) studied or operationalized as creativity in the presented research in the paper
The research method <sup>(d)</sup>	qualitative, quantitative	Identifying the method used in the presented research in the paper

<sup>(a, b, c, d)</sup>Parameters are taken partly from Seidel et al. (2010).

creativity from an environmental perspective remains under researched, as already noted by Seidel et al. (2010).

In synthesizing literature, we distinguished four different perspectives of researching the phenomenon—individual, group, organizational, and market. The most frequently identified perspective from which creativity was studied in the analyzed works is the individual level, which was used in over half the works. Studying creativity from a group perspective is also well-established, whereas only a few works explore the organizational perspective (Fehrer et al., 2022; Li & Kettinger, 2021; Mikalef & Gupta, 2021; Olszak et al., 2018; Roquilly, 2011) or investigate it through a multilevel approach (Ding et al., 2019; Miao et al., 2020; Wang et al., 2021). Moreover, we did not identify any paper analyzing creativity through the market perspective, with this deficiency of the literature having already been exposed in Seidel et al.'s (2010) review.

Evaluating a different study position is relevant if the aim is to determine how creativity is understood in the IS discipline. Our analysis was directed to recognizing creativity as an outcome, a process or a required feature, and reveals that creativity is most often interpreted as an outcome.

In the analyzed works, creativity was studied through different constructs and concepts, and, depending on the authors' study position interpreting creativity as an outcome, a process, or a required feature, we can place them in three groups. The first, and also the most represented one, is the group where creativity is understood as an outcome and authors conceptualize creativity as creative ideas and their originality, novelty, usefulness, number, etc. (Alnuaimi et al., 2010; Dennis et al., 2013; Siemon et al., 2016; Wang & Nickerson, 2019); creative output, outcome, or work (Goerzen, 2017; Seidel et al., 2019; vom Brocke & Lippe, 2010; Wang & Holahan, 2017); or individual (Binsawad et al., 2018; Klein et al., 2021; Lin et al., 2022; Miao et al., 2020; Schwarz et al., 2013; Shirish et al., 2014), employee (Ding et al., 2019; Ganye & Salam, 2022; Nevo et al., 2020; Wang et al., 2021; Yan et al., 2016), team (Qu et al., 2022; Yao et al., 2017); group (Jalowski et al., 2020), collective (Literat, 2017; Sher et al., 2020), and organizational creativity (Mikalef & Gupta, 2021). The second group of constructs views creativity as a process, which includes concepts such as idea generation (Nevo et al., 2020); creative use (Yu & Nickerson, 2011); creative task or act (Bergener et al., 2012; Jenkin et al., 2011); and knowledge acquisition, activation, or ideation (Aggarwal et al., 2021; Javadi et al., 2013). The third group involves papers that analyzed creativity as a required feature, that is, as organization, bounded, or com-

plementary creativity (Baskerville et al., 2016; Li & Kettinger, 2021).

The artefacts studied in the analyzed works vary from systems supporting creative processes in a different context, that is, creativity or group support systems (Alnuaimi et al., 2010; Althuizen & Reichel, 2016; Althuizen et al., 2012; Minas & Dennis, 2019; Müller-Wienbergen et al., 2011; Wang & Nickerson, 2019), to artefacts allowing modern approaches and ways of working, that is, electronic brainstorming, virtual reality, crowdsourcing, innovation communities, social networks (Aggarwal et al., 2021; Bhagwatwar et al., 2018; Ding et al., 2019; Hildebrand et al., 2013; Javadi et al., 2013; Kohler et al., 2011; Zhao & Oberoi, 2022), as well as studying the development of software (Li & Kettinger, 2021; Rose et al., 2016) or the use of IS or IT (Baker & Mills, 2011; Schwarz et al., 2013; Tamm et al., 2021) to endorse the creativity lens.

Observation of the role played by the construct, concept, or variable of creativity in research and applied methods bolsters the understanding of the creativity being researched in the IS discipline. The analysis of the identified works shows creativity is studied as a dependent variable and a dominance of quantitative research methods. Despite the evidence, it is worth noting the prominence of qualitative methods, especially in conference papers where the initial stages of research, ideas, and initiatives are presented.

A comprehensive evaluation of all 106 papers is provided in Appendix, Table A1. In the next chapter, we elucidate the results of this rigorous evaluation process. Distilling the evaluation results allowed us to delineate how creativity has been conceptualized in the IS discipline and discern five distinct streams of research in the last decade.

## 2 Comprehension and exploration of creativity

### 2.1 Conceptualizing and interpreting creativity

Creativity is a dynamic and elusive phenomenon that is at once tangible and intangible and can manifest as a mental state, a talent, a product, a solution, or a process (Ford, 1996; Pozzebon et al., 2011). It is most frequently described in OB studies as either a process culminating in the creation of something or the outcome itself, characterized by novelty, originality, usefulness, or meaning (Althuizen & Reichel, 2016; Amabile, 1983; Dean et al., 2006; Lubart, 2001; Mumford, 2003; Sternberg and Lubart, 1999). A key emphasis of creativity analysis lies in the novelty and utility of outputs (Pozzebon et al., 2011), with these outputs often being transformative ideas that serve as catalysts for problem solving and innovation (Brkovic et al., 2022). Irrespective of the integral role that



creativity plays in a myriad of disciplines and it having been explored from multiple perspectives, the IS field has thus far given it scant attention, particularly as regards how creativity unfolds within socio-technical processes (Seidel et al., 2010).

Our analysis of the literature and proceedings revealed that most authors view creativity as an outcome defined by the novelty and usefulness of the resultant ideas, products, services, or processes. A smaller proportion of the literature (less than one fifth of the works analyzed) treated creativity as a process, emphasizing the actions and behaviors inherent in creation, such as idea generation, the discovery of new associations, or other production processes. The differing perspectives on creativity, whether as **an outcome** or **a process**, have a significant influence on the various research streams within the IS discipline.

## 2.2 Five research streams on creativity

The literature analysis allowed us to discern five distinct research streams on creativity, as shown in Table 3. These streams arose from diverse perspectives on creativity (interpretations of creativity as an outcome or process), varying contexts of its application (creativity in the use of IS or IT, the impact of IS or IT usage on creativity), and the call for creativity in IS research and theorization, including its role in the development of IS or IT.

The streams identified above align with and build upon the findings of earlier literature reviews (Muller & Ulrich, 2013; Seidel et al., 2010); this specifically applies to three streams: IS/IT as a Catalyst for Creative Outcomes, Creativity as a Socio-Technical Process and Creativity as a Catalyst for Research, Theorizing, and IS/IT Development. Our analysis and synthesis of the literature suggest a pivotal direction for future research: a more rigorous exploration of creativity as an independent variable, and a deeper understanding of its role relative to the use of IS or IT, a cornerstone of the IS discipline (DeLone & McLean, 1992).

## 3 Future research on creativity

The predominant research stream, as shown by Muller and Ulrich (2013) and Seidel et al. (2010) a decade ago and reaffirmed by our review, delves into the role of IS and IT in fostering creativity through supportive systems. Despite the comprehensive nature of these inquiries, an unequivocal need remains for future research to trace the evolution of IS and IT in cultivating creative outcomes and processes within varying contexts. This endeavor will substantially enrich the knowledge pool within the IS discipline.

Several noteworthy directions for future research surface as we reflect upon the evaluation of the identified papers. First, it would be valuable to investigate the press or environmental perspective of creativity study (Rhodes, 1961). As Seidel et al. (2010) suggested, exploring the socio-technical contexts where creativity unfolds promises to yield invaluable insights. Second, the analysis reveals a conspicuous absence of studies treating creativity as an independent construct or concept. This means that exploring its role within unique and definitive models or frameworks within the IS discipline is a path worth pursuing. In addition, qualitative research remains conspicuously sparse, notably in analyzed papers from the Senior Scholars' List of Premier Journals, corroborating Seidel et al.'s (2010) observation that the market perspective in research in creativity studies is underrepresented. Further, within the IS discipline, the utilization of IS or IT is a fundamental concept (Basadur et al., 2014), scrutinized by different theories and models across various contexts. Technology in and of itself neither augments nor diminishes workers' performance (Orlikowski, 2000); instead, its use is paramount. Understanding the role of creativity in utilizing IS or IT, as presented in the third and fourth research streams, is consequently vital for enriching field knowledge. We concur with Seidel et al.'s (2010) recommendation to unravel the complex interplay of creativity and related concepts within socio-technical contexts.

Moreover, creativity, understood as the generation of diverse ideas, the exploration of alternatives, and the identification of business opportunities, is a critical step in problem solving and decision making (Perry-Smith & Mannucci, 2017; Seeber et al., 2017; Seidel et al., 2019). As organizations continuously seek innovative solutions, novel products, or improvements to existing offerings, business analytics (BA) within the IS discipline has emerged as an essential tool for facilitating informed, evidence-based decisions (Seddon et al., 2017). By drawing parallels between BA's process of transforming raw data into meaningful information and creativity's process of generating and creating novel outcomes, a promising area for future research surfaces.

Surprisingly, the study of creativity within the BA context, as per our literature search and analysis, is distinctly under researched. A solitary paper by Tamm et al. (2021) explores "creative analytics" and its role in decision making within the creative process of developing video games. By more deeply considering the role of creativity as an independent construct within the BA context, we can discover intriguing insights and identify emerging gaps. We believe this

Table 3. The five identified research streams on creativity.

Stream topic	Description	Representative papers
IS/IT as a catalyst for creative outcomes	A central focus of this research stream is to investigate how IS or IT, particularly that expressly designed to catalyze, amplify, and facilitate creativity (like creativity support systems, group support systems, electronic brainstorming mechanisms, virtual worlds, and crowdsourcing platforms), can be used to generate creative outcomes. Here, creativity is treated as a dependent variable and is quantitatively gauged by evaluating individual or group creative performance. This assessment is usually conducted based on several dimensions, including the number of ideas generated, their novelty (i.e., the proportion of original or unique ideas), workability (i.e., the number of practical or implementable ideas), relevance, breadth (variety or divergence of ideas), and depth (detail or elaboration of ideas), among others. This approach to studying creativity thus emphasizes the crucial role IS/IT plays as a tool for the activation, expression, and enhancement of creativity.	Alnuaimi et al., 2010; Althuizen & Reichel, 2016; Althuizen et al., 2012; Althuizen & Wierenga, 2014; Bhagwatwar et al., 2018; Dennis et al., 2013; Javadi et al., 2013; Lee & Chau, 2019; Minas & Dennis, 2019; Nevo et al., 2020; Olszak et al., 2018
Creativity as a socio-technical process	This research vein emphasizes understanding creativity as a dynamic process that unfolds within a socio-technical environment. It delves into the underpinnings of the creative process, considering components like creative labor, knowledge activation, the act of creation, and the nature of creative tasks. The research also explores the factors and determinants that govern this process, drawing extensively from theories rooted in OB studies. Notably, within this framework, creativity is largely treated as a dependent variable. However, a small, yet significant body of work also conceptualizes creativity as an independent variable, underscoring the complexity and multi-dimensionality of creativity in the IS/IT context.	Aggarwal et al., 2021; Bergener et al., 2012; Javadi et al., 2013; Jenkin et al., 2011; Müller-Wienbergen et al., 2011; Wang & Nickerson, 2019; Yu & Nickerson, 2011
The intersection of creativity and the usage of IS/IT	This research perspective highlights the interface between creativity and the practical application of IS/IT. The investigative emphasis is on understanding how individuals exercise creativity while using IS/IT solutions that may not have been designed to support creative tasks. This intricate relationship is explored through the analysis of “creative use” and “creative IT self-efficacy” (analyzed as dependent variables). The approach also investigates “individual creativity with IT” as an independent variable. This dual focus allows for a comprehensive examination of the role and impact of creativity in IS/IT utilization.	Baker & Mills, 2011; Schwarz et al., 2013; Tams & Dulipovici, 2022
The Impact of IS/IT Utilization on Creativity	This research perspective mostly concerns creativity evaluated from an individual- or process-oriented standpoint. The focal point of this strand of investigation is understanding how the utilization of IS/IT influences the ultimate creative performance. This analysis is undertaken independent of the individual’s characteristics or the process’s specific attributes. The overarching objective is to illuminate the symbiotic relationship between IS/IT utilization and creativity, stressing how the former can potentiate or modulate the latter in diverse contexts.	Bunjak et al., 2021; Ding et al., 2019; Hildebrand et al., 2013; Tamm et al., 2021; Thatcher & Brown, 2010; Wang et al., 2021
Creativity as a catalyst for research, theorizing, and IS/IT development	This research trajectory foregrounds creativity not merely as an output or a process but as a seminal element that underpins IS research and theorizing. The perspective shifts from a normative view of creativity as an end product or process to a comprehensive understanding of creativity as an inherent and indispensable component of the scholarly landscape. The premise here is that creativity acts as a catalyst, driving the generation of novel hypotheses and theoretical frameworks and the development and enhancement of IS/IT. This view transcends traditional paradigms, underscoring the importance of creativity as a seminal factor in the evolution and progression of the IS discipline itself.	Avital et al., 2012; Baskerville et al., 2016; Kohler et al., 2011; Li & Kettinger, 2021; Miranda et al., 2015; Tjørnehøj & Mathiassen, 2010; Trauth et al., 2012; Williams & Wynn, 2018

could add immensely to our understanding of creativity within the IS discipline.

#### 4 Conclusion with implications

Despite the persistent underrepresentation of creativity research within the discipline of IS (Muller

& Ulrich, 2013; Seidel et al., 2010), the symbiotic link between creativity and IS is stressed in many of the analyzed contributions. Our work serves as a substantial extension of the literature reviews conducted by Seidel et al. (2010) and Muller and Ulrich (2013), broadening the scope to include papers from the Senior Scholars’ List of Premier Journals and

proceedings from renowned IS conferences published between 2010 and 2022. The results of our exhaustive literature search and subsequent analysis reinforce the long-held assertions that creativity is minimally represented in the IS discipline.

Meticulous analysis and evaluation of 40 identified journal papers and 66 conference papers across selected analytical parameters permitted us to discern five distinct streams of creativity research within the mentioned discipline. These streams encapsulate varied research perspectives, including viewing creativity as an outcome or a process, exploring creativity in the utilization of IS or IT, probing the influence of IS or IT usage on creativity, and advocating for increased creativity in researching and theorizing within the IS discipline and its implications for IS or IT development.

The presented literature review makes three contributions. First, we can claim that, after a decade of researching and notwithstanding the strong calls for future creativity research in the IS discipline underlined in previous literature reviews, creativity continues to be an under researched area. Our finding that 0.51 percent of papers published in the selected journals in the period under scrutiny deal with creativity confirms the mentioned concerns of Couger et al. (1993), Seidel et al. (2010), and Muller and Ulrich (2013).

Second, our analysis corroborates the finding that the dominant pattern of researching creativity in the IS discipline remains the stream where an IS or IT is analyzed as a catalyst for creative outcomes. Accordingly, focusing on the impact of IS or IT use on the creative performance of individuals and groups (Muller & Ulrich, 2013; Seidel et al., 2010), even after years of researching, remains an important topic and an established stream of researching creativity in the discipline of IS.

Complementing earlier literature reviews, the analysis of works published in the last decade and contributions from renowned conferences led to two new streams of research being identified (the third contribution), which reflects the growing importance of creativity in business practices today. Further, these streams of research, studying the intersection of creativity and the usage of IS or IT and impact of IS or IT utilization on creativity, reflect the call made by Seidel et al. (2010) to study the socio-technical contexts where creativity unfolds. We may thus claim that the last decade of researching creativity in the IS discipline has, at least in terms of content, given support to the recommendations made in past literature reviews. Two identified research streams, empowered with future research studies and contributions, will definitely bring sig-

nificant insights and theoretically contribute to the IS discipline.

In conclusion, we draw noteworthy parallels between creativity and BA. Creativity, conceptualized as the process of generating meaningful and novel outcomes, mirrors the essence of BA, wherein the transformation and analysis of raw data generate valuable insights for problem solving and decision making. We posit that creativity must serve as a catalyst for BA, supplementing the transformation of data, fostering the development of new knowledge, informing decision-making processes, and enabling exceptional business actions. The potentially profound role played by creativity in BA, as evinced by our findings, deserves a more rigorous examination. We anticipate that our future research efforts will not only provide a more comprehensive understanding of this dynamic, but also significantly contribute to the existing body of knowledge on creativity within the IS discipline.

## Acknowledgment

Matej Černe and Mojca Simonovič were supported by the Slovenian Research and Innovation Agency (ARIS) under core project funding J5-2555. Aleš Popovič was supported by the Slovenian Research and Innovation Agency (ARIS) under research core funding P2-0442.

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## Appendix

Table A1. Evaluation of the analyzed papers (in alphabetical order).

Author /authors	The 4Ps perspective of creativity			The perspective adopted while studying creativity			The study position/view on creativity			The construct studied as creativity	Role of the creativity variable/construct		Research methods	
	Person	Process	Product	Press	Individual	Group	Market	Outcome	Process		Required feature	Dependent	Independent	Qualitative
Aggarwal et al. (2021)		×	×		×			×				(n/a)		×
Ahmad et al. (2018)	×				×			(n/a)				(n/a)		×
Alnuaimi et al. (2010)		×			×	×		×				×		×
Althuizen and Reichel (2016)	×				×			×				×		×
Althuizen and Wierenga (2014)	×		×		×			×				×		×
Althuizen et al. (2012)			×		×			×				×		×
Avital et al. (2012)	(n/a)				(n/a)			×				(n/a)		(n/a)
Baker and Mills (2011)		×			×			×				×		(n/a)
Baskerville et al. (2016)	(n/a)				(n/a)			×				×		(n/a)
Baumgart et al. (2021)			×		×			×				×		×
Baumgart et al. (2020)		×			×			×				×		×
Bergener et al. (2012)		×				×		×				×		×
Bhagwatwar et al. (2018)				×		×		×				×		×
Binsawad et al. (2018)	×				×			×				×		×
Boughzala et al. (2020)	×				×			(n/a)				(n/a)		×
Brkovic et al. (2022)			×		×			×				×		×
Bunjak et al. (2021)			×		×			×				×		×
Chiasson and Davidson (2012)	(n/a)				(n/a)			×				(n/a)		(n/a)
Ciriello and Richter (2015)	(n/a)				(n/a)			(n/a)				(n/a)		×
de Vreede and de Vreede (2017)			×		×			×				×		×
Debowski et al. (2021)	×				×			×				×		×
Dennis et al. (2013)	×				×			×				×		×
Ding et al. (2019)	×				×			×				×		×

(continued on next page)



Table A1. (continued)

Author/ authors	The 4Ps perspective of creativity				The perspective adopted while studying creativity			The study position/view on creativity			The construct studied as creativity		The context of studying creativity		Role of the creativity variable/construct		Research methods		
	Person	Process	Product	Press	Individual	Group	Organization	Market	Outcome	Process	Required feature	The construct studied as creativity		The context of studying creativity		Dependent	Independent	Qualitative	Quantitative
Fehrer et al. (2022)	×	×	×	×	×	×	×	×	×	×	×	(n/a)	Employee creativity	Business process design	×	×	×	×	×
Ganye and Salam (2022)	×	×	×	×	×	×	×	×	×	×	×	Employee creativity (n/a)	Remote working settings	Virtual creative collaboration	×	×	×	×	×
Gebbing et al. (2022)	×	×	×	×	×	×	×	×	×	×	×	Output creativity	A crowdsourcing platform	Startups	×	×	×	×	×
Goerzen (2017)	×	×	×	×	×	×	×	×	×	×	×	People's creativity (n/a)	A creative process (fashion design)	A creative process (fashion design)	×	×	×	×	×
Goncalves (2021)	×	×	×	×	×	×	×	×	×	×	×	(n/a)	Technology development	Technology development	(n/a)	(n/a)	(n/a)	(n/a)	(n/a)
Griebel et al. (2020)	×	×	×	×	×	×	×	×	×	×	×	A minimal degree of creativity	Data ownership rights	Data ownership rights	×	×	×	×	×
Haider (2012)	×	×	×	×	×	×	×	×	×	×	×	Employee creativity	Design knowledge for employee creativity	Design knowledge for employee creativity	×	×	×	×	×
Harrison (2010)	×	×	×	×	×	×	×	×	×	×	×	Employee creativity	Mass customization systems	Mass customization systems	×	×	×	×	×
He and Gou (2022)	×	×	×	×	×	×	×	×	×	×	×	Creativity of self-designed products	Organizational creativity	Organizational creativity	×	×	×	×	×
Hildebrand et al. (2013)	×	×	×	×	×	×	×	×	×	×	×	Individual and group creativity	Persuasive technologies	Persuasive technologies	×	×	×	×	×
Hossain et al. (2012)	(n/a)	×	×	×	×	×	×	×	×	×	×	Knowledge activation	Electronic brainstorming	Electronic brainstorming	×	×	×	×	×
Jalowski et al. (2020)	×	×	×	×	×	×	×	×	×	×	×	Creative task	A Creativity and Group support system	A Creativity and Group support system	×	×	×	×	×
Javadi et al. (2013)	×	×	×	×	×	×	×	×	×	×	×	Organizational creativity climate	Machine learning	Machine learning	×	×	×	×	×
Jenkin et al. (2011)	×	×	×	×	×	×	×	×	×	×	×	(n/a)	Intranet—a Group support system	Intranet—a Group support system	×	×	×	×	×
Karacic et al. (2021)	×	×	×	×	×	×	×	×	×	×	×	Organizational creativity climate	Creativity support systems	Creativity support systems	×	×	×	×	×
Khedhaouria and Belbaly (2011)	×	×	×	×	×	×	×	×	×	×	×	(n/a)	Support system	Support system	×	×	×	×	×
Klein, Oschinsky, Weber, and Niekhaves (2020)	×	×	×	×	×	×	×	×	×	×	×	Creative output	A creativity support system	A creativity support system	×	×	×	×	×
Klein, Oschinsky, Weber, and Niekhaves (2020)	×	×	×	×	×	×	×	×	×	×	×	Creative output	A creativity support system	A creativity support system	×	×	×	×	×
Klein, Weber, et al. (2020)	×	×	×	×	×	×	×	×	×	×	×	Individual creativity	Public sector	Public sector	×	×	×	×	×
Klein et al. (2021)	×	×	×	×	×	×	×	×	×	×	×	(n/a)	Virtual worlds	Virtual worlds	×	×	×	×	×
Kohler et al. (2011)	×	×	×	×	×	×	×	×	×	×	×	Breadth of ideas, Depth of ideas	Digital innovation	Digital innovation	×	×	×	×	×
Krejci et al. (2022)	×	×	×	×	×	×	×	×	×	×	×	(n/a)	Virtual reality	Virtual reality	×	×	×	×	×
Lee and Chau (2019)	×	×	×	×	×	×	×	×	×	×	×	(n/a)	Software development	Software development	×	×	×	×	×
Levallet and Chan (2022)	(n/a)	×	×	×	×	×	×	×	×	×	×	Complementary creativity	Software development	Software development	×	×	×	×	×
Li and Kettinger (2021)	×	×	×	×	×	×	×	×	×	×	×	Complementary creativity	Software development	Software development	×	×	×	×	×

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Table A1. (continued)

Author/authors	The 4Ps perspective of creativity				The perspective adopted while studying creativity			The study position/view on creativity		The construct studied as creativity		The context of studying creativity		Role of the creativity variable/construct		Research methods										
	Person	Process	Product	Press	Individual	Group	Organization	Market	Outcome	Process	Required feature	Individual creativity	Collective creativity	Open-source software	Technology in everyday work	Software development	Artificial intelligence in organizations	Business analytics tools, customer relationship management systems, and ERP	A survey system prototype	A creativity support system	A creativity support system	Dependent	Independent	Qualitative	Quantitative	
Lin et al. (2022)	×				×				×		Required	Individual creativity	Collective creativity	Open-source software	Technology in everyday work	Software development	Artificial intelligence in organizations	A survey system prototype	A creativity support system	A creativity support system	×	×	×	×	×	×
Literat (2017)	×		×		×				×		Required	Collective creativity	Collective creativity	A crowdsourcing platform	A crowdsourcing platform	A crowdsourcing platform	A crowdsourcing platform	A crowdsourcing platform	A crowdsourcing platform	A crowdsourcing platform	×	×	×	×	×	×
London and Grover (2021)	×				×				×		Required	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	(n/a)	(n/a)	×	×	×	×
Medappa and Srivastava (2020)			×		×				×		Required	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	(n/a)	(n/a)	×	×	×	×
Merchel et al. (2021)	×				×				×		Required	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	(n/a)	(n/a)	×	×	×	×
Miao et al. (2020)	×				×				×		Required	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	(n/a)	(n/a)	×	×	×	×
Mikalef and Gupta (2021)	×				×				×		Required	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	(n/a)	(n/a)	×	×	×	×
Minas and Dennis (2019)	×				×				×		Required	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	(n/a)	(n/a)	×	×	×	×
Müller-Wienbergen et al. (2011)	×				×				×		Required	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	(n/a)	(n/a)	×	×	×	×
Nevo et al. (2020)	×				×				×		Required	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	(n/a)	(n/a)	×	×	×	×
Nierhoff and Herrmann (2017)					×				×		Required	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	(n/a)	(n/a)	×	×	×	×
Olszak et al. (2018)					×				×		Required	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	(n/a)	(n/a)	×	×	×	×
Olszak et al. (2017)					×				×		Required	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	(n/a)	(n/a)	×	×	×	×
Ozturk et al. (2022)					×				×		Required	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	(n/a)	(n/a)	×	×	×	×
Park et al. (2015)					×				×		Required	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	(n/a)	(n/a)	×	×	×	×
Payne et al. (2018)	×				×				×		Required	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	(n/a)	(n/a)	×	×	×	×
Pilcicki et al. (2021)	×				×				×		Required	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	(n/a)	(n/a)	×	×	×	×
Pilcicki et al. (2022)	×				×				×		Required	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	(n/a)	(n/a)	×	×	×	×
Pitafi et al. (2020)	×				×				×		Required	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	(n/a)	(n/a)	×	×	×	×
Pozzebon et al. (2011)	×				×				×		Required	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	(n/a)	(n/a)	×	×	×	×
Qu et al. (2022)	×				×				×		Required	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	Open-source software	(n/a)	(n/a)	×	×	×	×

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Table A1. (continued)

Author/ authors	The 4Ps perspective of creativity			The perspective adopted while studying creativity			The study position/view on creativity		The construct studied as creativity	The context of studying creativity	Role of the creativity variable/construct		Research methods
	Person	Process	Product	Press	Individual	Group	Organization	Market			Outcome	Process	
Redlich et al. (2018)	×	×	×		×	×			×		A group support system	(n/a)	×
Ren et al. (2014)											Creative task and idea generation	×	×
Ren et al. (2017)			×		×	×		×	×		A creative task, a crowdsourcing experiment	×	×
Riemenschneider and Armstrong (2021)			×		×			×			IS personnel in organizations	×	×
Roquilly (2011)	(n/a)					×		×			Virtual worlds	(n/a)	(n/a)
Rose et al. (2016)	×			×	×						Process of software development	×	×
Schwarz et al. (2013)	×				×			×			Electronic document system	×	×
Seidel et al. (2019)		×			×			×			Autonomous design tools	×	×
Shao et al. (2021)	×				×			×			IoT in daily work	×	×
Sher et al. (2020)		×				×		×			An online discussion platform	×	×
Shirish et al. (2014)	×				×			×			Virtual worlds, user-generated content	(n/a)	(n/a)
Siemon et al. (2016)	×		×		×			×			A creativity support system	×	×
Siemon et al. (2017)	×							×			A creativity support system	(n/a)	×
Strohmann et al. (2018)	×							(n/a)			Creativity and design thinking workshops	(n/a)	(n/a)
Szopinski (2020)	(n/a)							(n/a)			A creativity support system	×	×
Tamm et al. (2021)			×		×			×			A creativity support system	×	×
Tams and Dulipovici (2022)	×				×			×			Business analytics	(n/a)	×
											Electronic knowledge repositories	×	×

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Table A1. (continued)

Author/authors	The 4Ps perspective of creativity			The perspective adopted while studying creativity			The study position/view on creativity			The construct studied as creativity	The context of studying creativity		Role of the creativity variable/construct		Research methods	
	Person	Process	Product	Press	Individual	Group	Organization	Market	Outcome		Process	Required	Feature	Dependent	Independent	Qualitative
Thatcher and Brown (2010)	×				×				×				The context of studying creativity (n/a)	×	×	×
Tjørnehoj and Mathiassen (2010)	×				×				×				Software process improvement technology	×	×	×
Trauth et al. (2012)	(n/a)			×	(n/a)				×				(n/a)	(n/a)	(n/a)	(n/a)
Vogel et al. (2021)					×				×				A creativity support system and virtual reality	×	×	×
vom Brocke and Lippe (2010)			×		×				×				(n/a)	(n/a)	×	×
Wang and Holahan (2017)		×			×				×				(n/a)	×	×	×
Wang and Li (2021)	×		×		×				×				TED Talk channels on YouTube	×	×	×
Wang and Nickerson (2019)	×				×				×				A creativity support system	×	×	×
Wang et al. (2020)			×		×				×				Kickstarter campaigns		×	×
Wang et al. (2021)			×		×				×				Social media for teamwork	×	×	×
Wang et al. (2013)			×		×				×				An online crowdsourcing environment	×	×	×
Wang et al. (2014)					×				×				(n/a)	×	×	×
Wang et al. (2016)					×		×		×				(n/a)	×	×	×
Williams and Wynn (2018)	(n/a)				(n/a)				×				Theorizing in the IS field	(n/a)	(n/a)	(n/a)
Wu and Boland (2017)	×				×				×				A creativity support system	×	×	×
Yan et al. (2016)	×				×				×				Online user innovation communities	×	×	×
Yao et al. (2017)			×		×				×				Collaboration tasks	×	×	×
Yu and Nickerson (2011)					×				×				Crowdsourcing, idea generation	×	×	×
Zhao and Oberoi (2022)					×				×				A “crowdsolving” platform	(n/a)	(n/a)	(n/a)
Zou et al. (2014)	×		×		×				×				Crowdsourcing, open innovation communities	×	×	×

Legend: x—evaluated parameter and (n/a)—data not available, parameter was not evaluated.