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Navigating the moral maze: a literature review of ethical values in business process management

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Abstract

Purpose – Business process management (BPM), as a pillar of information systems (IS) research, has become more complex with the advent of new technologies, emphasizing the need for moral and ethical perspectives. To foster moral behavior and responsible action, including ethical values in IT systems and processes can be a solid option. By incorporating a socio-technical perspective, we are able to analyze the various aspects of BPM and organizational processes and the incorporated values. We find an overall acknowledgment of the importance of values and ethics in BPM.

Design/methodology/approach – This publication explores ethical values within BPM through a systematic literature review (SLR). The study aims to identify the ethical dimensions inherent in BPM and their practical implications in process management and task execution. The methodological approach adopted is a SLR (Boell and Cecez-Kecmanovic, 2015), adapting the PRISMA guidelines (Page *et al.*, 2021) to identify 82 articles from 21 top IS journals suggested by Lowry *et al.* (2013).

Findings – A descriptive framework is developed to explain the use and application of ethical values within business processes. This framework enables practitioners and researchers to categorize and understand the various ethical considerations involved in BPM. It provides a structured approach highlighting the interrelation between process perspectives and ethical values, demonstrating how different BPM approaches may have varying ethical implications. We compare past and future research in business processes, identifying areas for further investigation and theoretical development. A historical analysis of values and literature also helps contextualize contemporary discussions on ethics in BPM, shedding light on the evolution of ethical considerations within this domain.

Originality/value – Our study contributes to a more nuanced understanding of BPM, highlighting the importance of considering ethical values and socio-technical perspectives in designing and implementing business processes. These findings contribute to understanding the values associated with different types of processes and their employment and highlight potential areas for future research. Our study provides ethics-oriented research in IS with novel insights by examining BPM from an ethical value perspective. We contribute to the BPM literature by examining which values are applied in which process types from which perspective. In addition, our research suggestions provide food for thought for both research streams.

Keywords BPM, Ethics, Moral, Socio-technical systems, Ethical value, Literature review

Paper type Literature review

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1. Motivation

In the realm of contemporary business operations, the integration of digital technologies has revolutionized the landscape of organizational processes (Xie *et al.*, 2023; Seggie *et al.*, 2017). While these technologies aim to streamline operations and enhance efficiency, the continued involvement of human agents underscores a crucial aspect that requires close consideration from an ethical perspective. This juxtaposition of automation and human agency brings to light a discrepancy that requires a deeper exploration of the moral dimensions inherent in these processes. The moral imperative becomes increasingly important as organizations navigate new technologies, evolving labor dynamics, and novel data collection methods (Beerepoot *et al.*, 2023; Rowe and Markus, 2023; Gupta *et al.*, 2018). Scholars such as Spiekermann *et al.* (2022) and Trier *et al.* (2023) emphasize the importance of responsible development and use of digital technologies and advocate for increased focus on the ethical implications of technological advances.

Despite the progress made in business process management (BPM), which has led to significant improvements in value creation, such as transparency, efficiency, and sustainability, the ethical implications of these processes have mostly been ignored (Ko and Comuzzi, 2023). However, precisely such ethical approaches constitute responsible, socially acceptable use of information and communication technology (ICT) (Rogerson, 2011) with equal importance for business process management. The existing literature mainly concentrates on Information Systems (IS), with limited specificity regarding ethical values within business processes (Spiekermann *et al.*, 2022). Furthermore, when employing the term *values*, the emphasis tends to be on value creation rather than the ethical implications for human actors involved in these processes (Tusinski Berg, 2018). In general, the interplay of process, information system, and actor can holistically be examined through the perspective of socio-technical information systems (Cummings and Srivastva, 1977; Mumford, 2006; Beath *et al.*, 2013). Therefore, exploring the ethical implications and values in business process management is crucial, especially in digital technologies and automation. To fill this gap, we propose the following research questions:

RQ1. Which ethical values can be found within the literature on business processes?

RQ2. How are these identified ethical values applied and categorized within different perspectives and types of business processes?

This publication explores ethical values within Business Process Management through a systematic literature review. The study aims to identify the ethical dimensions inherent in BPM and their practical implications in process management and task execution. The methodological approach adopted is a systematic literature review (SLR) (Boell and Cecez-Kecmanovic, 2015), adapting the PRISMA guidelines (Page *et al.*, 2021) to identify 82 studies from 21 top IS journals suggested by Lowry *et al.* (2013).

The results provide valuable insights into the ethical dimensions of BPM and enhance our understanding of the relationship between technology, processes, and ethical values. A descriptive framework is developed to explain the use and application of ethical values within business processes. This framework enables practitioners and researchers to categorize and understand the various ethical considerations involved in BPM. It provides a structured approach highlighting the interrelation between process perspectives and ethical values, demonstrating how different BPM approaches may have varying ethical implications. Through gap spotting, we compare past and future research in business processes, identifying areas for further investigation and theoretical development. A historical analysis of values and literature also helps contextualize contemporary discussions on ethics in BPM, shedding light on the evolution of ethical considerations within this domain.

Since ethical values can only be adopted by individuals directly (Crane, 2016), they must be integrated into the organization while adapting the technology to them. To embody these values and virtues, great effort and careful coordination are required (Demuijnck, 2014). Especially in the context of BPM, it is crucial to consider the individual in the process steps and tasks to achieve not only a gain in efficiency but also good process acceptance on the part of those involved in the process (e.g. Kholkar *et al.*, 2013; Woliński and Bala, 2018).

2. Background

In both businesses and organizations, ethics provide a foundation for evaluating actions and shaping the climate and values within these organizations (Conrad, 2022). This goal is shared by employees and managers who want to be part of an ethical organization. Moreover, ethical principles foster credibility in public perception. Individuals are more inclined to endorse and support companies they view as honest and accountable (Crane, 2016) – when employees have confidence in the ethical principles of their organization, they hold the organization in high regard. Ethical principles cultivate shared objectives and a common language, promoting a positive work atmosphere and fostering a sense of belonging among employees (Riivari and Lämsä, 2017).

In addition, ethical considerations require management to consider economic, social, and moral factors in decision-making. This approach leads to better decisions that consider the interests of the public, employees, and the long-term goals of the organization (Sarker *et al.*, 2019). Ethical organizations can address societal concerns and engage with employees to resolve conflicts and issues, thereby contributing to societal well-being and harmony (Carroll and Buchholtz, 2008).

2.1 Ethics, morality, and values

The term *ethics* denotes the "philosophical science that deals with the rightness and wrongness of human actions" (O'Neil, 2004). Ethical theories consider the comprehensive investigation of ethical problems, concepts, principles, reasoning, judgments, interconnections, and justification (Becker, 2002). While some may use moral and ethical to mark distinctions, as using moral for traditional views of right or wrong and ethical for ideal views, most scholars use them synonymously (Garnett 1951) [1].

Ethical theories can roughly be divided into three schools of thought: teleological ethics, deontological ethics, and weak-normative and contextual approaches (Düwell *et al.*, 2011). IS researchers, however, tend to consider virtue ethics as a separate school of ethics (Gal *et al.*, 2022) – we are aware of this but will adhere to the categorization of Düwell *et al.* (2011). Deontological ethics consider actions as right or wrong, regardless of their consequences – with Kantian duty ethics (Kant, 1998) as one of the most prominent examples (Roth, 2005). Other ethical theories in this area include discourse ethics (Habermas, 1987) and justice ethics (Rawls, 1971).

Teleological theories, on the other hand, take the outcome of an action into consideration. Ethical theories of this family accept the thought that the end can justify the means. Prominent teleological ethical theories include, according to (Becker, 2002), despite them being rather different in their approach, ancient virtue ethics (Aristotle *et al.*, 2009) and the more modern utilitarianism (see for example Mill and Bentham, 2015). Value ethics (Scheler, 1973) also denote a prominent teleological ethical theory. Given the threefold classification, it is not possible to exactly categorize some theories into deontological or teleological definitions, regardless of the interpretation of their respective outcomes. Likewise, it is difficult even to classify some theories into deontological or teleological definitions, regardless of which of these definitions is applied. The classification into weak-normative

and contextual approaches allows for a more refined distinction, e.g. between ethics of prudence and narrative ethics (Düwell *et al.*, 2011).

Applied ethics take aspects of (normative) ethical theories [2] in consideration, mapping them to a domain of application. However, it is also possible to view a field of application through the lens of a (normative) ethical theory (Winkler, 2018). *Descriptive ethics*, on the other hand, are focused on the empirical compilation and description of existing moral beliefs — they involve normative and evaluative considerations as well as conceptual work (Hämäläinen, 2016).

Business ethics, as an important domain of applied ethics in regards to organizational structure, procedures, and professional life in general, deals with the ethical actions of organizations and corporations, applying ethical theories and theoretical frameworks to the context of business (Rendtorff, 2012). The advantage of applied ethics, such as business ethics, lies in their mid-level characteristic, being more abstract than a strict guideline and more concrete than fundamental principles like, for example, virtue ethics (Paulo, 2021). Within business ethics, streams such as *cosmopolitanism* suggest a global approach, finding responsible principles and values that should guide organizations and enterprises worldwide, focusing on global social responsibility (Rendtorff, 2017). Concepts such as *business legitimacy* imply that a company must consider the legitimating concepts and values to exist and prosper in a society (Rendtorff, 2020) while *sustainability*, in terms of renewable and low-impact business practices (Rendtorff, 2019), provides a different approach to foster more ethical business conduct.

Many scholars rely on values in the field of ethics because they reflect the moral concepts of a society. *Values* can be defined as conscious or unconscious orientation directives for human performance (Düwell *et al.*, 2011). Ethical values – sometimes called common values – are held in common by a specific group of people; for example, within a company or a country, their authority usually stems from standard agreements (Carr, 1998). They are not necessarily limited to the philosophical context, although certain philosophers like Windelband (1926) and Scheler (1973) have focused on defining the concept of value (Düwell *et al.*, 2011). In business ethics (Demuijnck, 2014; Agle *et al.*, 2014), scales (Schwartz *et al.*, 2012) are often used to assess personal values (Schwartz and Bilsky, 1987). For system development, value-based engineering (Spiekermann *et al.*, 2022; Spiekermann, 2023) and value-sensitive design (IEEE, 2021) provide a holistic approach to incorporating values into systems, yet the challenge of uncovering them prevails. Existing collections of values can be found for specific technologies, such as artificial intelligence (AI) (e.g. Francés-Gómez, 2023) or Big Data (e.g. Custers *et al.*, 2017; La Fors *et al.*, 2019), but rarely in integral collections of shared values. The most comprehensive collection of values known to the authors has been compiled by Winkler (2018) to foster ethical and sustainable software development.

2.2 BPM and socio-technical systems

Socio-technical systems, as defined by Cummings and Srivastva (1977), are "organized collection of [people] and technology, structured to produce a specified outcome." These systems are integral to modern business landscapes, where the interaction between technical components and human factors facilitates the primary goal of value creation. This perspective positions information systems as socio-technical systems (Beath *et al.*, 2013), underscoring the importance of elements of technology, organization, and people and the various socio-technical systems (Sarker *et al.*, 2019).

Contemporary value creation in businesses is often supported by BPM, which enables the digitization, automation, and orchestration of business processes while integrating technical and human elements within socio-technical systems through ICT (Dumas *et al.*, 2018; Weske, 2019). As a managerial strategy, BPM is often conceptualized as a cycle of diverse tasks that require execution. Looy *et al.* (2012) delineate the standard capabilities as: *(1)* Modeling, *(2)*

Deployment, and *(3)* Optimization. These stages of the lifecycle are succeeded by *(4)* Management and encapsulated within *(5)* Culture and *(6)* Structure. This underscores the importance and impact of organizational culture and values on core business operations. The cultural component, encompassing values and beliefs, is also identified as one of the six core elements of BPM in the capability framework by Rosemann and Brocke (2014). Business process models serve as tools for articulating organizational processes, offering a simplified representation of reality (Dumas *et al.*, 2018), which are instrumental for documentation purposes and facilitate executing processes in day-to-day operations. Here, it becomes obvious that any value-based process management approach must consider the whole process lifecycle to enable a holistic view.

Based on the value chain model of Porter (1998), business processes can be categorized into three types: *core processes/functional processes*, which contain the essential value creation of an organization, *support processes/non-functional processes*, which support and enable the core processes, and *management processes*, which guide the other two types (Dumas *et al.*, 2018). On the other hand, other process characteristics can be used to categorize processes further, e.g. *external* vs *internal processes*, where the former refers to a focus primarily on external stakeholders (customers/suppliers) and the latter relates to internal stakeholders (management) (Hammer and Champy, 2001).

2.3 The importance of ethics in BPM context

In the field of BPM, the integration of ethics and values plays a pivotal role, from the general value creation and process management to influencing specific aspects such as process mining, process dashboards, and people involved in process management-related activities (Spiekermann *et al.*, 2022). Process mining, a method of analyzing event data to derive process insights, consists in handling sensitive information. The ethical considerations of maintaining privacy and confidentiality are critical, in line with the principles proposed by Aalst (2018). Process dashboards, visual representations of key performance indicators, and process metrics significantly impact organizational decision-making. Additionally, individuals actively involved in BPM activities contribute to the ethical fabric of organizational processes. Research by Ferreira and Otley (2009) underscores the role of individuals in the development of ethical organizational cultures, emphasizing the importance of shared values and ethical behavior in the execution of business processes. Workflow automation and standardization, a fundamental element of BPM, streamlines and orchestrates business processes. Ethical considerations in workflow automation extend to job displacement and potential dehumanization. Scholars like Dykman and Davis (2012) stress the need for organizations to proactively address these concerns, highlighting the ethical responsibility to mitigate conflicting impacts on the workforce through retraining and upskilling initiatives.

Introducing decision-making algorithms into BPM poses ethical challenges related to fairness and bias. As noted by Obermeyer *et al.* (2019), EFRA (2022), and Orwat (2020), algorithmic decision-making may unintentionally perpetuate discriminatory practices. Organizations must adopt ethical guidelines and fairness-based algorithms to ensure unbiased and fair outcomes and avoid reinforcing societal biases. Using business analytics in BPM requires ethical data governance to address privacy concerns and maintain data integrity. This includes transparent data practices, informed consent, and compliance with data protection regulations. When undertaking business process redesign within BPM, it is critical to engage stakeholders ethically. This is emphasized by Crane and Livesey (2017), who highlights the importance of engaging diverse stakeholders and considering their perspectives to avoid unintended negative consequences. Ethical considerations in redesign should go beyond efficiency gains to include the welfare and interests of all stakeholders involved. As BPM evolves, an ethical foundation becomes a moral obligation and a strategic

necessity. By drawing on established ethical frameworks and recognizing the ethical dimensions inherent in process-related technologies and human interactions, organizations can foster a culture of responsibility and trust in their BPM efforts.

The socio-technical approach enables us to identify correlations with the applied values and process perspectives. Some values, such as autonomy, accountability, or human health, are more critical on an individual level than global ones (cf. Burbano and Chiles, 2022). At an organizational level, security may be an essential value, while reliability may be a significant value for technology. The breakdown of these perspectives ensures that we gain insight into the various factors and can better take them into account in future projects. Depending on who is affected by a process or process technology, it is relevant to take the appropriate perspective for this group of people and take it into account.

2.4 Research methodology

To address our research questions on ethical values in business process management, we conducted a systematic literature review following Boell and Cecez-Kecmanovic (2015). Our review is classified as a descriptive analysis of existing literature (Rowe, 2017). We ensured systematic exploration within the Information Systems (IS) domain by adhering to the 21 top-tier IS journals proposed by Lowry *et al.* (2013). Here, the authors compared expert rankings and bibliometric measures of IS journals to determine the journal quality and group them into different segments. Tier 1 is the highest, most impactful tier, consisting of three journals: Management Information Systems Quarterly, Information Systems Research, and Journal of Management Information Systems. Tier 2 likewise has a high impact on the IS community and consists of eight journals, including the Journal of the Association for Information Systems and the European Journal of IS. The third segment consists of 10 journals that are very relevant to IS, such as Management Information Systems Quarterly Executive and Business and Information Systems Engineering.

Our search strategy incorporated the following keyword combinations: *(Ethics AND "Business Process")*, *("Ethical Value" AND "Business Process")*, *("Ethical Value")*, *("Moral Value" AND "Business Process")*, *("Moral Value")* and *("Business Process" AND Task)*. With these keywords, we aim to cover research on ethical values considering BPM as well as research on BPM, which includes ethical values, resulting in a comprehensive overview. These keywords were selected broadly to avoid excluding relevant articles with a slightly divergent scope. We examined these articles in the subsequent screening process and did not impose any temporal restrictions on our search to ensure a comprehensive overview of the existing literature. To allow a rigorous search and improve the traceability of the literature selection process, the Preferred Items for Systematic Literature Reviews and Meta-Analysis (PRISMA) have been applied (Page *et al.*, 2021). Relevant articles were selected based on keywords and titles, followed by further refinement through abstract selection. The remaining articles underwent a full-text review and were coded using the four-eye principle.

In adherence to the PRISMA statement, we included articles that engaged with (ethical) values or ethics and offered ethical reflections on (internal and external) processes. The topics of AI and big data were solely included in our sample if they occurred in the context of business processes. We underscored the human aspect of business processes, such as challenges or prerequisites for employees or those affected by processes. We examined articles that address process-supporting elements, such as enterprise resource planning systems, for consideration of ethical and personal values. Articles that did not engage with business processes or solely delved into technical details like process performance were excluded from our sample. [3] Figure 1 presents the PRISMA flow diagram, delineating the results.

Our coding is based on inductive and deductive elements and was developed to examine processes and process tasks (cf. Table 1), illuminating the internal or external perspective.

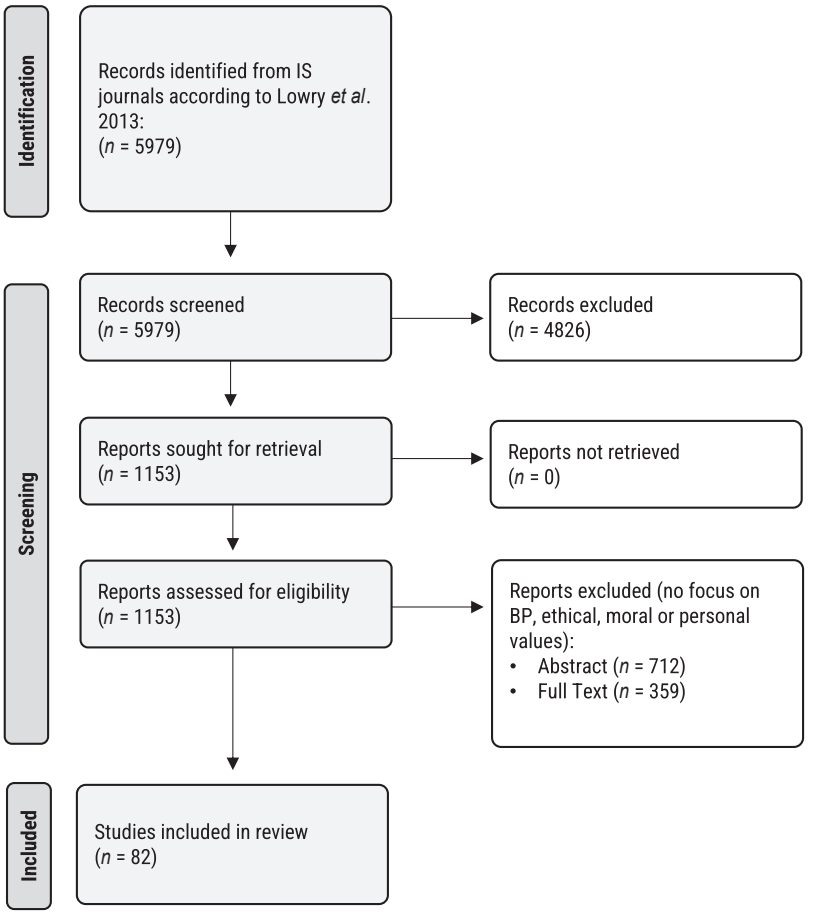

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Figure 1.
PRISMA diagram of the literature collection and screening procedure

For our inductive approach, we relied on thematic analysis (Squires, 2023). We adhered to the classification of overarching values proposed by Winkler (2018), identifying and allocating them to the respective process areas and tasks. In doing so, we allocated lower values and synonymous terms to the corresponding overarching values. Additionally, we inspected the socio-technical aspect of the study, specifically the organization, individual, or technology (Orlikowski, 2007; Leonardi, 2012), to gain a deeper comprehension of our sample's structure. One inductive category we coded for was the area of application of the values within BPM. Likewise, we identified which type of process was the publication's focus and whether it was an internal or external business process.

3. Results

3.1 Findings

The final literature review sample identified various values classified according to different dimensions, which we combined into a descriptive framework of ethical values in business process management shown in Figure 2. Each article could only be part of one dimension but

Area	Codes	Comment	Major issue/Precision
Field of Research	– Big Data – Business Process Management (BPM) – Information and Communication Technology (ICT) – Information Systems (IS) – Organization – Other	Inductive category	This category was created in an inductive procedure, adhering to thematic analysis (Squires, 2023)
Process Type	– Operational Process – Support Process – Management Process – *Research process – added by the authors*	Deductive category (Porter, 1998)	This category categorizes the different types of processes. The authors added a fourth type of process, which subsumes information about research processes and a meta-perspective on BPM research
Process Perspective	– Internal Process (I) – External Process (E)	Deductive category based on Hammer and Champy (2001)	This category was used to determine if the processes are intra-organizational or inter-organizational
Socio-technical Systems Perspective	– Organization – Individual – Technology	Deductive category based on Orlikowski (2007) and Leonardi (2012)	This category was used to determine which socio-technical perspective was employed in the respective research paper. One paper could include several perspectives
Ethical Values	– Accountability – Autonomy – Community – Dignity – Education – Efficiency – Equality – Freedom – Human Health – Human Capabilities – Human Productivity – Human Welfare – Human Wellbeing – Justice – Knowledge – Maintainability – Privacy – Property – Relationship – Reliability – Respect for Norms – Security – Simplicity – Transparency – Trust – Usability – Environment – *Meta Perspective on Values – Added by the authors*	Deductive category based on Winkler (2018)	This category is based on the overarching values for sustainable software development as proposed by Winkler (ibid.). These overarching values include other subordinate partial values. We have taken the liberty of adding the category of the meta-perspective on values. We have applied this when a publication discusses the significance of values for a specific application area. One paper could include several values

Table 1.
Coding methodology

Source(s): Table by authors

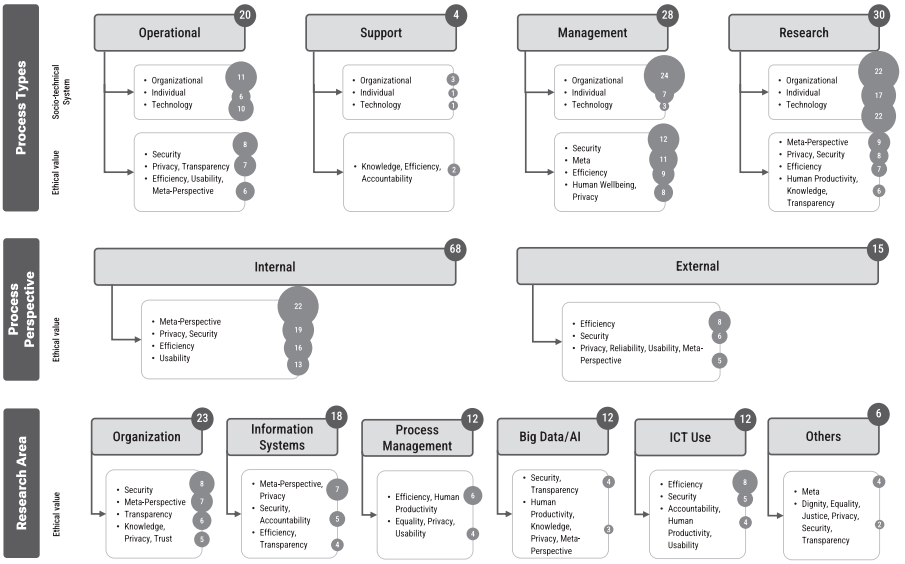

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Figure 2.
Descriptive framework of ethical values in process management

may include one or multiple values from the catalog (cf. Winkler, 2018). The first dimension is used to classify the articles and their used values according to the different process types relying on the categorization into operational, support, and management processes (Porter, 1998; Dumas *et al.*, 2018) while extending this to include research processes for analysis purposes. Including this additional process type allows for codifying various approaches and references to ethical values, implying the potential impact of ethical values on all other process types in the future. Here, we also matched the three categories of socio-technical systems (Beath *et al.*, 2013) and named the central values that occur for each kind of process. As previously mentioned, processes can also be categorized as internal or external, which is the second perspective used. Internal processes are focused on the operations within an organization's boundaries (Weske, 2019), while external business processes extend beyond the confines of a single organization.

Finally, we grouped the articles according to IS research topics based on the initial content of ethical values and business processes in the final sample [4]. The title and abstract were primarily used for this purpose, followed by the contents of the articles. This covers various topics, including information systems, process management, the use of information and communication technology, recent advances in research such as big data and AI, organizational matters, and a category for articles that do not fit into any other category, such as the work of Adam *et al.* (2017) on gender and identity in IT or Rowe *et al.* (2023) on the responsibility of autonomous driving systems.

In addition to Winkler's existing overarching values, we identified the *meta-perspective*. These considerations deal with values without explicitly naming, treating, or integrating them. We included these in our sample because they often (e.g. Ghasemaghaei and Kordzadeh, 2024; Karlsson and Ågerfalk, 2009) emphasize the relevance of values and their areas of application but cannot be classified in the existing categories.

3.1.1 Specific results. Looking at *process types*, it can be seen that a meta-perspective predominates in research on business processes (e.g. Hassan and Mathiassen, 2017;

Mumford, 2006). This perspective refers to publications and contributions that consider and think about values and their influence without directly naming said values. In the operational processes, we identified security, privacy, and efficiency (e.g. Weinmann *et al.*, 2016; Li *et al.*, 2014) as the most frequent values, and these were also of great importance in the management processes (Córdoba, 2009; Chatterjee *et al.*, 2015). Regarding socio-technology, the operational processes mostly emphasized technological aspects, while management processes emphasized the organizational aspects and support processes focused on both. A focus on the individual can primarily be found in research, where the individual is partially examined from a metaperspective as a part of the whole (e.g. Li *et al.*, 2014; Bednar and Welch, 2019).

On the other hand, the *process perspectives* show a significant difference in the number of articles for each category. Most identified articles focus on internal processes, while only a few discuss external processes. Internal processes primarily address classical values of the Industrial IoT and the utilization of critical data within an organization, with a particular emphasis on security and privacy. Conventional management perspectives and values, such as efficiency, usability, and human productivity, are prevalent (e.g. Chang and King, 2014; Markus and Mentzer, 2014). Conversely, publications on external processes predominantly explore the meta-perspective on values, emphasizing transparency and privacy for external stakeholders (e.g. Smith and Hasnas, 1999; Hassan and Mathiassen, 2017).

Classifying all relevant articles into different *research areas* yielded promising results. Security and privacy were among the most mentioned values in each research area, except for AI and Big Data. Efficiency was also widely cited, which can be explained by the fundamental goal of value creation in businesses and its optimization. Each research area includes process management, which may explain why process management and AI articles focus on efficiency and human productivity to increase value creation. Ethical considerations would likely fall under the ICT use category, which considers the use of information and communication technology. The explicit focus of business process management includes ethical values such as security and privacy, knowledge, and usability. On an organizational level, values such as justice, human well-being, and accountability are also important, shifting the focus toward socio-technical systems' human aspect. All things considered, in comparison to the two aforementioned dimensions, the categorization into distinct domains provides a unique viewpoint by incorporating additional values beyond security, privacy, efficiency, and usability. This approach also emphasizes more sustainable values such as equality, transparency, maintainability, knowledge, human productivity, and human well-being.

3.1.2 Joint findings. *Organization* as a category encompasses the organizational-orchestrating aspect of BPM without focusing too much on the technical aspects. In this category, we find a strong reference to ethics in general (Culnan and Clark, 2009), but only a limited reference to ethical values; the focus is more on ethical codes that operationalize ethical values for a company (Benitez-Amado *et al.*, 2015).

Information Systems as a category has a strong research focus, often linked to BPM research (processes). At the research level of IS, we see a solid reference to ethics in general (Cheng *et al.*, 2014; O'Leary, 2020; Smith and Hasnas, 1999), but also a perspective on the development of IS (Ågerfalk and Eriksson, 2017; Iivari *et al.*, 2015). The process perspective strongly focuses on research, occasionally adopting a management perspective – furthermore, this category is relatively balanced between an internal and external perspective. Socio-technics are viewed as a whole, with a slight trend towards the organizational perspective. In terms of values, the meta-perspective on values is dominant. Otherwise, the more substantial mention of equality and justice and the constant appearance of efficiency is of interest.

Process management subsumes all aspects of process management (and their organizational and manufacturing processes). Here, values are significant from a meta-

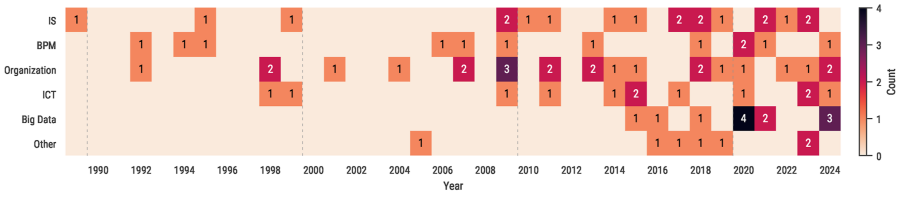
perspective (May *et al.*, 2013), and the risks of BPM, especially in privacy, are discussed (Dulipovici and Baskerville, 2007; Kummer and Mendling, 2021). The perspective in the research is mainly internal, and the processes considered are primarily operational or management-oriented. One part deals with socio-technology, considers BPM as individual cases, and strongly focuses on research (Mumford, 2006). Values like efficiency, privacy, and security are essential, while we also found an increasing interest in the value of equality, showcasing a partial area of an individual perspective.

AI and Big Data are research and application areas that involve processing large amounts of data. They are closely related and integrated into a company's value chain. The training and execution of AI methods and techniques rely on large amounts of data, which enable companies to process data from processes for value creation. Both areas are significant research drivers in IS, particularly concerning the new opportunities that this technology presents for process execution and management, as well as their primary data (Abbasi *et al.*, 2016; Gupta *et al.*, 2018), both in terms of new business models (Wiener *et al.*, 2020) and risks (Clarke, 2015). AI, on the other hand, is perceived more critically. However, the role of corporate success, including corporate processes, is certainly addressed (Enholm *et al.*, 2021), as are risks (Gupta *et al.*, 2021) and ethical issues (Siau and Wang, 2020), as well as explainability (Asatiani *et al.*, 2020). For both technologies, the internal perspective is dominant, and we find a strong focus on technology in the process types and a more minor focus on the organizational aspects. In terms of values, we observe a focus on transparency and security, as well as usability, efficiency, and privacy, with efficiency and usability being more relevant to big data and privacy and security being more applicable to AI.

ICT use involves using application and communication software to manage, design, execute, and improve business processes. This category demonstrates a focus on the ethical use of ICT, albeit from a strongly organizational perspective (Banerjee *et al.*, 1998; Chatterjee *et al.*, 2015), which is strongly associated with the responsible use of ICT (Markus and Mentzer, 2014). The elected process perspective is exclusively internal, focusing on operational and management processes. The ethical values most frequently here are efficiency, security, usability, productivity, and security.

Others as an integrative category includes e-government, healthcare, gender, and specific IT design and development processes associated with company operations. The breakdown of this process is primarily focused on operational and management aspects, with only occasional reference to the meta or support level. However, the internal perspective is again preferred, and security, privacy, and efficiency dominate regarding values. The socio-technical view, on the other hand, is very heterogeneous, with either technological focus (Begier, 2009), organizational focus (Kamal *et al.*, 2015), individual focus (Chatterjee *et al.*, 2009b) or holistic focus (Bednar and Spiekermann, 2023) all represented.

3.1.3 Historical development of research areas and value incorporation. In addition to analyzing the content, examining the number of publications that address process management and ethical values can provide valuable insights. Figure 3 illustrates the



Source(s): Figure by authors

Figure 3. Temporal distribution of primary research fields

evolution of the classes covered within the final sample over the past 35 years. The graph highlights an increase in the number of publications and diversification into more specialized areas. In the early years, research focused on information systems, processes, and the comprehensive use of information and communication technology. However, research has shifted toward more specific applications in recent years, particularly emphasizing explainable and ethical AI. The advent of new technologies and applications often paves the way for novel research streams and an increasing number of publications. Despite this, these current topics have been present for more than ten years, indicating that integrating ethical values needs to catch up to the cutting edge of application and research. Interest in ethical values in AI and big data is on the rise (e.g. Wiener *et al.*, 2020; Clarke, 2015), while research on ethical values in the broader field of Information Systems (IS) (e.g. Mingers and Walsham, 2010; Iivari *et al.*, 2015) and BPM (e.g. Porra and Hirschheim, 2007) remains consistent.

Over time, interest in values has seen a marked increase. Winkler (2018) has identified 32 overarching values, each integrating different sub-values. We identified 25 values in our sample, shown in Figure 4 (we removed values only present in one article). We have also added the metaperspective on ethical values many IS researchers took (Alt *et al.*, 2021; Hassan *et al.*, 2018; Bednar and Welch, 2019). One value of constant interest over time is efficiency, a practical value contributing to organizational success (May *et al.*, 2013). Looking at the development over time, various trends can be made out: In recent years, the values of equality and justice have also become increasingly important (e.g. Chatterjee and Sarker, 2013; Adam *et al.*, 2017; Markus and Mentzer, 2014), so does transparency (e.g. Enholm *et al.*, 2021; Gupta *et al.*, 2021) and trust (e.g. Ezingeard *et al.*, 2005; Heyder *et al.*, 2023) especially with the increasing emergence of AI. On the one hand, recently, there has been an increase in human-related values such as human health and human welfare (e.g. Córdoba, 2009;

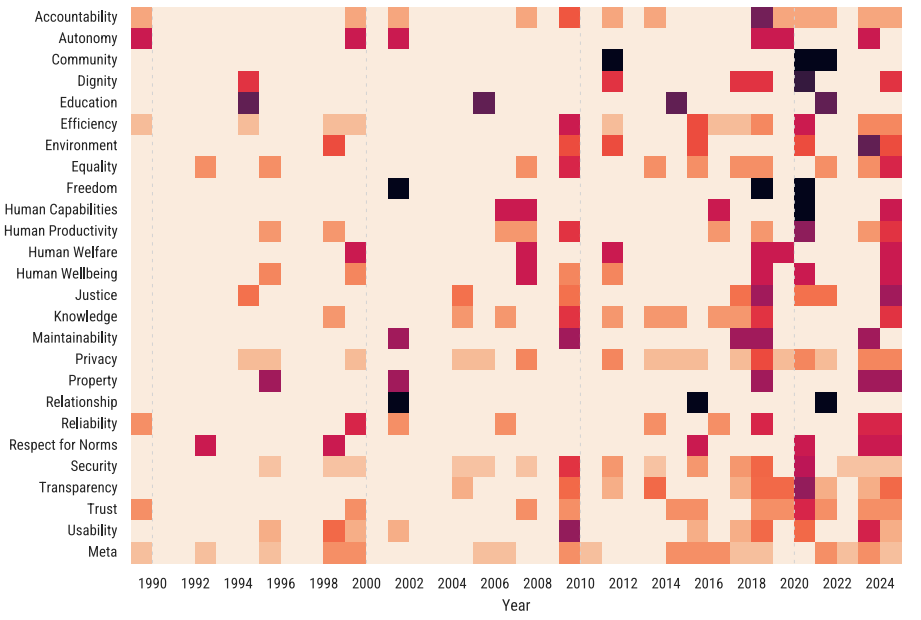


Figure 4.
Temporal distribution of identified values (percentage of yearly discovered publications)

Source(s): Figure by authors

Li *et al.*, 2014; Heyder *et al.*, 2023). However, values such as efficiency or human productivity (e.g. O'Leary, 2020; Chen *et al.*, 2014) are still of interest.

As seen above, with the classification into different research areas, privacy and security are essential values mentioned in the articles. Both topics are closely tied to data collection, transformation, and use through various systems.

At the organizational level, the values of security, efficiency, and privacy can be identified from the management perspective. Personal values such as human health and well-being are scattered, partly from the individual perspective in the operational processes and partly from the technological aspect of the support processes (Dulipovici and Baskerville, 2007). In general, functional values predominate over individual humanistic values (e.g. Ixmeier *et al.*, 2024; Li *et al.*, 2014). It is noticeable in this case that we could not find individual values for either support processes or research from a personal perspective. Similarly, support processes have yet to be considered from a holistic socio-technical perspective.

3.2 Discussion

BPM and its application is a complex field consisting of a multitude of IT artifacts, processes, and individuals (Weske, 2019) who all have their personal values and beliefs (Agle *et al.*, 2014). As motivated above, value creation in businesses demands considering ethical concerns and ethical values in the design and implementation of business processes from both an organizational and technical perspective (Beverungen *et al.*, 2020). By analyzing relevant literature on business process management and ethical values, we identified relevant values for different process types (Dumas *et al.*, 2018), especially in combination with a socio-technical perspective (Beath *et al.*, 2013; Sarker *et al.*, 2019).

Analyzing the field of business processes regarding ethical values (Winkler, 2018) using a socio-technical perspective (Beath *et al.*, 2013) allows us to take a broad view of processes, their execution, and management. The individual perspective, for example, is mainly considered in operational processes (Burbano and Chiles, 2022; Chatterjee *et al.*, 2009a), where the few values found are much more centered on the individual due to freedom, human health, and justice compared to the other process types. On the other hand, management processes from an organizational perspective (Culnan and Clark, 2009; Chatterjee *et al.*, 2015; Córdoba, 2009) are dominated by values such as efficiency, productivity, and maintainability. Another significant aspect is the lack of consideration of support processes in the IS literature. In contrast, the other process types – including research processes – occur relatively evenly in the literature, whereas support processes are lacking. This could be because those processes are more challenging to identify and collect, leading to fewer results.

As illustrated in Figure 2 and described in the previous section, parts of the BPM literature recognize the importance of values without naming them specifically or going into depth. This corresponds with a large portion of the literature on values in IS in general (Spiekermann *et al.*, 2022). Research in BPM could benefit from a more sophisticated procedure for collecting and implementing values adapted to BPM and from a list of values specially adapted to BPM. The value efficiency, as depicted in Figure 4, remains a consistent focus in IS research, particularly in process management. This emphasis likely stems from the inherent objective of business processes to generate value, wherein optimizing and enhancing efficiency is fundamental (Dumas *et al.*, 2018; Begier, 2009). However, with the emergence of ethics as a research perspective, other values such as accountability, security, or transparency have gained prominence next to a slight focus on human actors in human productivity.

We have also found that from the technological perspective, the values of efficiency and safety are among the most popular (Markus and Mentzer, 2014; Dolata *et al.*, 2021).

Depending on which processes are considered, in individual cases (Heyder *et al.*, 2023; Begier, 2009), values centered on people, such as human welfare or human wellbeing, are also considered. However, this perspective still needs to be exhausted, particularly concerning cooperative interaction between individuals and the design of technologies for human-friendly and efficient collaboration. Here, the identified values of the value catalogs (Winkler, 2018; IEEE, 2018) and approaches to value-based design can provide support (Spiekermann, 2016, 2023). In other areas, values have proven to be a successful vehicle for the development and acceptance of IT solutions Sapraz and Han (2021), and consideration of individual values can also help to support collaboration and the acceptance of specifications, as they also occur in BPM Wickham *et al.* (2022). Therefore, we see the values found as an essential first step in developing and implementing ethics-oriented business process management and ethical value creation in the long term.

3.2.1 Limitations. It is important to consider possible limitations of this literature review when interpreting the results. Firstly, the research was confined to the field of information systems literature, with a particular focus on journal articles. While this provides a solid foundation, relevant insights from conference proceedings were not included and may offer additional perspectives, suggesting a potential avenue for future research. As we have shown, the literature on IS is often relatively high-level, lacking the concrete views of practitioners who encounter processes, process data, and the moral conflicts they generate daily. While our paper establishes a basis for more practical future research, we must recognize that these perspectives may not be included.

In our sample of 82 articles, 12 articles focused explicitly on BPM, and 23 primarily adopted an organizational perspective, yet these studies remain relevant to BPM. Despite not all articles centering exclusively on BPM, we were still able to derive meaningful insights applicable to the field. However, it is essential to acknowledge that the varying explicity of the focus on BPM across the sample may influence the specificity of some findings.

Additionally, our sample comprised both theoretical (e.g. Abbasi *et al.*, 2016; Alt *et al.*, 2021) and empirical studies (e.g. Adam *et al.*, 2017; Davison and Chatterjee, 2023). Many of the empirical articles relied on smaller-scale interviews, which can affect the generalizability of the findings for specific areas.

3.2.2 Research propositions. The insights on the intersection of BPM and ethical values have enabled us to formulate several research propositions. These propositions underscore the gaps and challenges identified during the literature review. These areas hold particular promise for advancing the field of BPM as a whole and ethics-oriented research in information systems (IS).

Proposition 1. Elicitation of values focused on the individual in BPM environments – especially on people performing a certain task (ethical evaluation of technological entities is widespread compared to this). This perspective needs to be improved, and although certain works such as Burbano and Chiles (2022), Chatterjee *et al.* (2009a), and Weinmann *et al.* (2016) are making an effort to contribute to this perspective, much more detailed research must be done.

Proposition 2. BPM could use tools to integrate ethical values into process environments more efficiently. Some approaches have been taken to implement values, mostly business-related, in enterprise resource planning (May *et al.*, 2013) or ICT systems in general (Bednar and Welch, 2019) but, to the best of the author's knowledge, not yet in business process modeling. Further research can build on these and implement specific tools and approaches, such as developing and improving modeling languages incorporating

ethical values at a fine-granular level, ethical value-oriented frameworks, and meta-models.

Proposition 3. IS, in general, and the BPM community, in particular, can benefit from having a specific procedure for collecting and implementing ethical values in the BP context. Currently, existing methods (e.g. Spiekermann, 2023) are not explicitly designed for the BP context with inherent sub-process steps and system specifics. Accordingly, developing a suitable procedure, possibly even at the task level, could be profitable here.

4. Conclusion

Our literature review aimed to obtain an overview of ethical values in business process management. We looked at values integrated into process-supported value creation in businesses to achieve this. We identified critical areas of interest, relying on a list of human values for sustainable software development (Winkler, 2018). By adopting a socio-technical-system perspective (Beath *et al.*, 2013; Cummings and Srivastva, 1977; Sarker *et al.*, 2019), we analyzed the values employed in BPM from an individual, organizational, and technical aspect. We found that operational and management processes primarily focus on efficiency and security. Research on BPM often adopts a metaperspective, discussing values and their influence without explicitly naming them. We also observed that internal processes within an organization prioritize security, efficiency, and privacy. In contrast, external processes across companies often focus on knowledge as a primary value while adopting a metaperspective on values. However, our study also revealed some gaps in the current research, notably the absence of individual values for support processes or research from a personal perspective and the need to consider support processes from a holistic perspective.

Furthermore, we discovered that the individual perspective on processes primarily concerns operational processes, strongly emphasizing values such as freedom, human health, and justice. In contrast, management processes from an organizational perspective are dominated by values such as efficiency, productivity, and maintainability, which are more focused on the company's success. This suggests that there is room for more focus on individuals and values such as human well-being or human health.

Interestingly, we found a strong focus on research in the context of processes, particularly those that adopt a metaperspective on values. This perspective often removes the focus from the individual, the design of technology, and the human in general. Many research projects that adopt this metaperspective need to be revised to assign to a single perspective, indicating a preference among IS researchers for a holistic view. This preference focuses on global values or values as a concept rather than individual ones. Our findings suggest that the discipline could benefit from a more detailed view, both at the process-task level and of the individual and their needs. This could lead to better acceptance of processes and their management or better alignment of the individual with the organization's values where the process occurs. These insights pave the way for future research to explore these aspects and their implications for the field of BPM in greater depth.

Our study thus contributes to a more nuanced understanding of BPM, highlighting the importance of considering ethical values and socio-technical perspectives in designing and implementing business processes. These findings contribute to understanding the values associated with different types of processes and their employment and highlight potential areas for future research. Our study provides ethics-oriented research in IS with novel insights by examining BPM from an ethical value perspective. We contribute to the BPM literature by examining which values are applied in which process types from which

perspective. In addition, our research suggestions provide food for thought for both research streams.

Although ethical values already play an essential role in research and the real world, both domains could benefit from a more refined and deliberate approach to applying ethical values in process management and overall organizational value creation.

Notes

1. This does not necessarily apply to their counterparts in other languages, as there can be a substantial distinction between both terms.
2. We use the term ethical theories for the remainder of this publication. We deem this to encompass normative ethics and ethical theories in general. These are distinct from descriptive ethics, meta-ethics, and applied ethics.
3. A comprehensive list of all articles in the final sample and their coding can be found in the supplementary files.
4. The cross-sectional search string allowed for an *a posteriori* classification based on research focus.

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Entries denoted with * are part of the final sample of the References review that can be found in the* supplementary files*, including the final coding

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Table A1. Detail coding of the final sample

Coding

				Socio-technical Systems Perspective			Ethical Values																													
Source	**Field of Research**	**Process Type**	**Process Perspective**	**Individual**	**Organization**	**Technology**	**Accountability**	**Autonomy**	**Community**	**Dignity**	**Education**	**Environment**	**Efficiency**	**Equality**	**Freedom**	**Human Health**	**Human Capabilities**	**Human Productivity**	**Human Welfare**	**Human Wellbeing**	**Justice**	**Knowledge**	**Maintainability**	**Privacy**	**Property**	**Relationship**	**Reliability**	**Respect for Norms**	**Security**	**Simplicity**	**Transparency**	**Trust**	**Usability**	**Meta**
Abbasi *et al.* (2016)	Big Data	Research	E	●	●	●	○	○	○	●	●	●	○	○	○	○	○	○	○	●	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Adam *et al.* (2017)	Other	Research	I	○	●	○	○	○	○	○	○	○	○	○	○	●	●	○	○	○	●	○	○	○	○	●	○	○	○	○	○	○	○	●
Ågerfalk and Eriksson (2017)	IS	Research	I	●	●	●	○	○	○	○	○	○	○	○	○	●	●	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Alt *et al.* (2021)	IS	Research	E	●	●	●	○	○	○	○	○	●	○	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	●	○	○
Asatiani, Hakkarainen, *et al.* (2023)	ICT	Operational	I	○	○	●	●	○	○	○	○	●	○	○	○	○	●	○	○	●	○	○	○	○	○	○	○	●	○	○	●	○	○	●
Asatiani, Malo, *et al.* (2020)	Big Data	Research	I	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	●
Baiyere *et al.* (2020)	BPM	Operational	I	○	●	●	○	○	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	●	○	○	○	●	○	○
Banerjee *et al.* (1998)	ICT	Management	I	●	●	○	○	○	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	●	○	○	○	○	●	○	○	○
Bednar and Spiekermann (2023)	ICT	Management	I	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	●
Bednar and Welch (2019)	Organization	Operational	I	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○
Begier (2009)	BPM	Support	I	○	○	●	○	○	●	○	○	●	○	○	○	○	○	○	○	○	●	○	●	○	○	○	○	●	○	○	○	○	○	○
Benbya *et al.* (2020)	Big Data	Research	I	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	●	○	○	○	○	○	○	○	○	○	○	●
Benitez-Amado, Llorens-Montes, et al. (2015)	Organization	Management	I	●	●	○	○	○	○	○	○	○	○	○	○	○	○	●	●	○	○	○	●	○	○	●	○	●	○	○	○	●	○	●
Benlian *et al.* (2022)	BPM	Operational	I	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	●	○	○	○	○	○	○	●	○	○	○	○	○	○
Beverungen *et al.* (2020)	BPM	Research	E	●	●	●	●	●	○	◐	◐	○	○	●	●	○	○	○	◐	○	○	●	○	●	○	●	○	○	○	○	○	●	○	○
Brown and Watts (1992)	Organization	Management	I	○	●	○	●	○	○	○	○	●	●	○	○	○	●	○	○	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○
Bunker *et al.* (2007)	Organization	Management	I	○	●	○	○	○	○	○	○	●	○	○	○	●	●	○	●	○	○	○	○	●	○	○	○	●	○	○	○	●	○	○
Burbano and Chiles (2022)	Organization	Operational	I	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	●
Bygstad and Munkvold (2011)	IS	Research	E	●	●	○	○	○	○	●	○	○	●	○	○	○	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Chatterjee, Moody, *et al.* (2015)	ICT	Management	I	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	●	○	○	○	○
Chatterjee and Sarker (2013)	Organization	Research	I	○	●	○	○	○	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	●	○	○	●	○	○	○

(*continued*)

Table A1.

Source	Field of Research	Process Type	Process Perspective	Socio-technical Systems Perspective			Ethical Values																														
				Individual	Organization	Technology	Accountability	Autonomy	Community	Dignity	Education	Environment	Efficiency	Equality	Freedom	Human Health	Human Capabilities	Human Productivity	Human Welfare	Human Wellbeing	Justice	Knowledge	Maintainability	Privacy	Property	Relationship	Reliability	Respect for Norms	Security	Simplicity	Transparency	Trust	Usability	Meta
Chatterjee, Sarker, and Fuller (2009a)	IS	Research	I	●	●	○	●	●	○	○	○	○	○	●	●	○	○	○	○	○	●	○	●	○	●	○	○	○	○	○	●	○	○
Chatterjee, Sarker, and Fuller (2009b)	Organization	Operational	I	●	○	○	○	○	○	○	○	●	○	○	○	○	●	○	○	○	○	●	○	○	○	○	●	●	○	○	●	○	○
Chen et al. (2018)	Organization	Management	E	●	○	○	○	○	○	○	○	●	○	○	○	○	○	○	○	○	○	●	○	○	○	○	●	●	○	○	○	●	○
Cheng *et al.* (2014)	Organization	Management	I	○	●	○	○	○	○	○	○	○	●	○	○	○	●	○	●	○	○	○	●	●	○	○	○	●	○	○	○	●	○	○
Clarke (2015)	IS	Support	I	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	●
Cordeba (2009)	Big Data	Research	I	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	●
Couger (1989)	IS	Management	I	○	●	○	○	○	○	○	○	●	●	○	○	○	○	○	○	○	○	●	○	●	○	●	●	○	○	○	○	○	○	○
Culnan and Clark (2009)	IS	Management	I	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	●
Davison, Martinsons, *et al.* (2009)	Organization	Management	I	○	●	○	●	○	○	○	○	○	●	○	○	○	○	○	○	○	○	○	●	○	○	○	○	●	○	●	○	○	○	○
Davison and Chatterjee (2023)	Organization	Management	I	○	●	○	○	○	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	●	●	●	○	●	○	○
Dolata *et al.* (2021)	Organization	Management	I	●	○	○	○	○	○	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Du *et al.* (2011)	IS	Research	I	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	●	○	○	○	○	●	○	○	○	○	○	○	○	○
Dulipovici and Baskerville (2007)	ICT	Management	E	○	●	○	○	○	○	○	●	○	○	○	○	○	○	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○
Enholm *et al.* (2021)	Organization	Support	I	○	●	○	○	○	○	●	○	○	●	○	○	○	○	○	○	●	○	○	○	○	○	○	○	○	●	○	○	○	○	○
Ezingeard *et al.* (2005)	Big Data	Operational	I	○	○	●	○	○	○	○	○	●	○	○	○	○	○	○	○	○	●	○	○	○	○	○	○	○	○	○	●	●	○	○
Ghasemaghaei and Kordzadeh (2024)	Other	Operational	E	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	●	○	○	○	○	●	○	○	○	○	○	●	○
Gupta, Deokar, *et al.* (2018)	Big Data	Management	I	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	●	○	○	○	○	●	○	○	○	○	○	○	○
Gupta, Kamboj, *et al.* (2021)	Big Data	Research	I	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	●
Hasan and Ditsa (1999)	Big Data	Research	I	●	●	○	○	○	○	○	○	●	○	○	○	●	●	○	○	○	●	○	○	○	○	●	○	○	○	○	○	○	○	●
Hassan and Mathiassen (2017)	ICT	Support	E	●	●	●	○	○	○	○	○	○	○	○	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	●	○	○	○
Hassan, Mingers, *et al.* (2018)	IS	Research	E	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
Heyder *et al.* (2023)	IS	Research	E	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	●	○	○	○	○	○
Iivari *et al.* (2015)	Big Data	Management	I	○	○	●	○	○	○	○	○	●	○	○	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Ixmeier *et al.* (2024)	IS	Research	E	●	○	○	○	○	○	○	●	○	○	○	○	○	○	○	○	○	○	●	○	○	○	○	●	○	○	○	○	○	○	●

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Source	Field of Research	Process Type	Process Perspective	Socio-technical Systems Perspective			Ethical Values																												
				Individual	Organization	Technology	Accountability	Autonomy	Community	Dignity	Education	Environment	Efficiency	Equality	Freedom	Human Health	Human Capabilities	Human Productivity	Human Welfare	Human Wellbeing	Justice	Knowledge	Maintainability	Privacy	Property	Relationship	Reliability	Respect for Norms	Security	Simplicity	Transparency	Trust	Usability	Meta
Joia and Correia (2018)	Organization	Operational	I	○	●	○	●	○	○	○	○	○	●	○	○	○	○	●	○	○	○	●	○	○	○	○	●	○	○	●	○	○	○
Kaganer *et al.* (2010)	Organization	Management	I	○	●	○	○	○	○	○	○	●	○	○	○	○	○	○	○	●	○	○	○	○	○	○	●	○	○	○	●	○	○
Kamal *et al.* (2015)	Big Data	Research	I	●	●	●	●	○	○	●	○	○	○	○	○	○	○	○	●	●	●	○	●	○	○	○	○	●	○	●	○	○	○	●
Karlsson and Ågerfalk (2009)	ICT	Management	E	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	●	○	○	○	○	○
Karwatzki *et al.* (2018)	ICT	Operational	I	○	●	○	○	○	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	●	●	○
Kim *et al.* (2016)	IS	Research	I	●	●	●	●	○	○	○	○	○	○	○	●	○	○	●	●	○	○	●	○	○	○	○	●	○	○	○	○	○	○	○
Kirsch (2004)	Organization	Operational	I	○	●	○	○	○	○	○	○	●	○	○	○	○	○	○	○	○	○	●	○	○	○	○	○	●	○	○	●	○	○	○
Kummer and Mendling (2021)	BPM	Management	I	○	●	○	○	○	○	○	○	○	●	○	○	○	○	○	○	●	○	○	○	○	○	○	○	○	○	●	○	○	○	○
Lacity *et al.* (2024)	ICT	Management	I	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	●
Lei *et al.* (2023)	Organization	Research	E	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	●	○	○	○	○	○	○
Levi-Bliech *et al.* (2018)	BPM	Operational	I	●	●	●	○	○	●	●	○	○	○	●	○	●	○	○	●	○	○	○	○	○	○	○	○	●	○	●	○	○	○	○
Li *et al.* (2014)	Organization	Operational	I	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	●	○	●	○	○	○	○
Lundeberg (1992)	BPM	Research	I	○	●	○	●	●	○	○	○	○	○	○	○	○	○	●	○	○	○	○	●	○	○	○	○	○	○	●	●	○	○	○	○
Markus and Mentzer (2014)	ICT	Operational	I	○	○	●	○	○	○	○	○	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	●	○	○	○
May *et al.* (2013)	BPM	Operational	I	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
McLaughlin and Gogan (2018)	Other	Operational	I	○	●	○	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	●	●	○	○	○
Miltgen and Peyrat-Guillard (2019)	IS	Operational	I	●	○	○	●	○	○	○	○	○	●	○	○	○	○	○	○	○	○	●	○	○	○	○	●	○	●	○	○	○	○	○
Mingers and Walsham (2010)	IS	Research	I	●	●	●	○	○	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	●	●	○	○
Mumford (1994)	BPM	Research	I	●	●	●	●	○	○	○	○	○	○	○	○	○	●	○	●	○	●	●	○	○	○	○	●	○	●	○	○	○	○	○
Mumford (1998)	BPM	Research	I	●	●	●	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	●	○	○	○	○	○	○	●	○	○	○	○	●
Mumford (2006)	Organization	Management	I	○	●	○	○	○	○	○	○	○	○	○	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	●	●	●	●
O'Leary (2020)	ICT	Research	E	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	●	○	●	●	○	○	○	●	○	○	○	●
Porra and Hirschheim (2007)	BPM	Research	I	●	●	●	○	○	○	●	○	○	●	○	○	○	○	○	○	●	○	○	●	●	○	○	○	○	○	○	○	○	○	○	○
Rowe and Markus (2023)	Other	Research	I	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	●	○	○	○	○	○	○	○	●	○	○	●

(*continued*)

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Source	Field of Research	Process Type	Process Perspective	Socio-technical Systems Perspective			Ethical Values																																		
				Individual	Organization	Technology	Accountability	Autonomy	Community	Dignity	Education	Environment	Efficiency	Equality	Freedom	Human Health	Human Capabilities	Human Productivity	Human Welfare	Human Wellbeing	Justice	Knowledge	Maintainability	Privacy	Property	Relationship	Reliability	Respect for Norms	Security	Simplicity	Transparency	Trust	Usability	Meta
Saunders and Miranda (1998)	Organization	Management	I	○	●	○	●	○	○	●	○	○	○	○	○	○	○	●	●	○	○	○	○	○	○	○	○	○	●	○	○	○	○
Siau and Ling (2017)	ICT	Operational	I	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	●	○	○	○	○	○	○	●
Siau and Wang (2020)	Big Data	Research	I	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	●	○	○	○	○	○	○	●
Slater *et al.* (1995)	IS	Management	I	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	●
Smith and Hasnas (1999)	IS	Management	E	●	●	●	●	●	○	○	○	●	○	○	○	○	●	○	○	○	○	○	○	○	●	○	○	○	●	○	●	○	○
Spiekermann *et al.* (2022)	IS	Research	I	●	●	●	●	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	●	○	○	○	○	●	○	○	●
Staub *et al.* (2001)	Organization	Management	I	●	●	●	●	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	●	○	○	○	○	●	○	○	●
Tuisku *et al.* (2023)	Other	Operational	I	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	●
Vandaele and Decouttere (2013)	Organization	Management	I	○	●	○	●	○	○	○	○	●	○	○	○	○	○	○	●	○	○	○	○	○	○	○	●	○	●	●	○	○	●
Weinmann *et al.* (2016)	Other	Operational	I	○	○	●	○	○	○	○	○	○	○	○	○	●	●	●	●	○	○	○	○	○	○	●	○	○	○	○	○	○	○
Wiener *et al.* (2020)	Big Data	Management	I	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	●	○	○	○	●	●	○	○	○	●	○	○	○
Willcocks and Smith (1995)	BPM	Management	I	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	●
Zhou and Kapoor (2011)	Organization	Research	I	○	●	○	○	○	○	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	●	●	○

Explanation: I: Internal, E: External, ● : present, ○ : not present