

IMPLEMENTING DIGITAL RESPONSIBILITY THROUGH INFORMATION SYSTEMS RESEARCH

A Delphi Study of Objectives, Activities, and Challenges in IS Research



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Digital Responsibility Guides a Reflected Digital Transformation

Digital transformation involves fundamental changes in organizational capabilities and deeply integrates into everyday life (Li et al., 2018; Hess et al., 2014). It is considered a crucial endeavor for implementing societal goals, such as economic success, decent jobs, social welfare, ecological sustainability, and an inclusive society. At the same time, digital transformation's magnitude and transformative power have amplified its consequences, raising crucial questions and comprehensive challenges faced by individuals, organizations, and our digital society.

Given digital transformation's ubiquity and pivotal role across stakeholders, understanding its potential unintended consequences and biases is imperative. These include adverse effects of technology use and a lack of sustainability. Such reflections resulted in the development of normative requirements that govern ongoing processes and IT artifacts used for digital transformation.

Researchers have articulated various critical aspects of digital transformation over the years, highlighting the importance of user privacy, computer ethics, ecological sustainability, transparency of algorithms, and many more (e.g., Jobin et al., 2019; Orbik & Zozulakova, 2019; Thorun, 2018). These individual threads were recently brought together under the umbrella term of „Digital Responsibility“ (DR). This perspective goes beyond the neutral „Digital Transformation“ notion and accentuates its ubiquitous individual, organizational, and societal implications. DR can be defined as the efforts of stakeholders such as individuals, companies, or public institutions to contribute to a sustainable, inclusive, fair, and value-based digital society (or digital transformation in general) beyond the legal minimum (Müller, 2022; Thorun, 2018; Trier et al., 2023; Wade, 2020). The DR cube (Trier et al., 2023) outlines eight core DR principles encompassing sustainability, participation, functionality, data privacy, transparency, fairness, norms & values, and accountability. These DR principles constitute fundamental, value-based normative requirements that aim to motivate actors to attain responsible digital transformation. The DR perspective intends to stimulate a second wave of more reflected digital transformation research within the information systems (IS) discipline – a discipline that acknowledges the many critical views and more prominently integrates them into a coherent and prioritized discourse in academic research and public debates.

Against this background and in terms of the **18th International Conference on Wirtschaftsinformatik (WI23)**, held in Paderborn, Germany, with its leitmotiv „**Digital Responsibility: Social, Ethical, Ecological Implications of IS**“, our goal was to clarify the focus of IS research on DR. This study is guided by the following research question: What are the IS community's most relevant objectives, activities, and challenges regarding DR?

To answer this research question, we engaged a panel of more than 35 experienced IS researchers spanning diverse research topics within the IS discipline through a comprehensive Delphi study. Details about the application of this methodology are provided at the end of this paper.

The well-established Delphi method allowed us to identify and consolidate relevant objectives, activities, and challenges regarding DR as perceived by the IS community. We believe that this undertaking offers a promising starting point for mobilizing a broader community effort toward amplifying responsibility in our IS research efforts to benefit individuals, organizations, and our digital society.

Subsequently, we present the main findings of the Delphi study regarding critical objectives, activities, and pertinent challenges to provide an impulse for beneficial key actions for the IS community.

Objectives Pursued by Digital Responsibility

We asked the panelists to provide objectives they wanted to achieve with DR. These objectives provide a normative framework that may guide the implementation of digital transformation in a responsible way.

1. Values and norms: Ensuring digital transformation that supports ethical norms and human values, including trust, well-being, autonomy, competence, democratic values, and health.

The most relevant objective of DR is to ensure that digital transformation remains anchored in fundamental human values and societal norms. This includes trust, well-being, autonomy, competence, democratic values, and health. An illustrative instance of this principle is the development of ethical standards to guide digital initiatives. Human health, autonomy, working conditions, and competence should be enhanced by employing human-centric digital systems. When creating value in ecosystems, we also need to address democratic values, trust, authenticity, and indirect benefits for society.

2. Transparency: Improving transparency of algorithms, systems, open data, processes, and decision-making.

As part of achieving DR, improving transparency is a critical aspect. Transparency should extend to algorithms, systems, open data, processes, and decisions, empowering users to comprehend individual decisions and the overarching decision-making process. This includes avoiding algorithmic black boxes, developing transparent artificial intelligence (AI) systems, and related algorithms with high degrees of explainability. It also encompasses a transparent ecological footprint for digital technologies such as energy consumption for streaming or training AI models.

3. Education: Offering education programs that contribute to digital literacy and responsible actions.

To attain DR, there is a need for offering and evolving education programs that actively contribute to digital literacy and responsible actions. Such initiatives represent essential contributions to fostering (digital) enlightenment and elevating the level of digital literacy in society. This objective requires to position DR as an integral part of IS programs where students learn how to act in a digitally responsible manner.

4. Fairness: Achieving justice and sensitivity for discriminatory biases in fair information systems that are not exploitative.

The objective of fairness calls for achieving justice and establishing sensitivity to discriminatory biases. Central to this objective is the design of fair information systems that refrain from exploiting their stakeholders. Achieving this goal requires a general non-maleficence and fair value allocation among all participating actors. Averting biases involves, for example, the commitment to gender sensitivity and proactively assessing biases that may reside in data. Another closely related facet of this objective consists of the establishment of proper working conditions, also in offshore destinations.

5. Sustainability: Understanding and creating synergies between digital transformation and sustainability to mitigate environmental impacts.

This objective emphasizes the importance of understanding and creating synergies between digital transformation and environmental sustainability to mitigate detrimental ecological impacts. This objective includes theorizing the role of sustainability from a research perspective and answering essential questions such as how to be sustainable and enable environmental sustainability through technology or how to align progress with sustainability. Further goals involve pursuing energy-aware computation, enhancements in green mobility, and minimizing our carbon footprint (e.g., through the reuse of digital artifacts). Research can contribute to the emergence of more sustainable service ecosystems and seek innovative solutions to address pressing climate-related challenges.

6. Privacy: Defining and ensuring responsible data handling to recognize privacy needs and digital sovereignty.

An objective with a long history pertains to the definition and assurance of responsible data handling to acknowledge privacy needs and digital sovereignty. This objective calls for building trustworthy digital infrastructures that facilitate secure data exchange. This involves ensuring the responsible handling of personal information that preserves privacy rights, even across organizational boundaries. Related to this, researchers should work on establishing concepts for digital sovereignty and explore how to comprehensively address privacy and ethical use of data in new technology contexts.



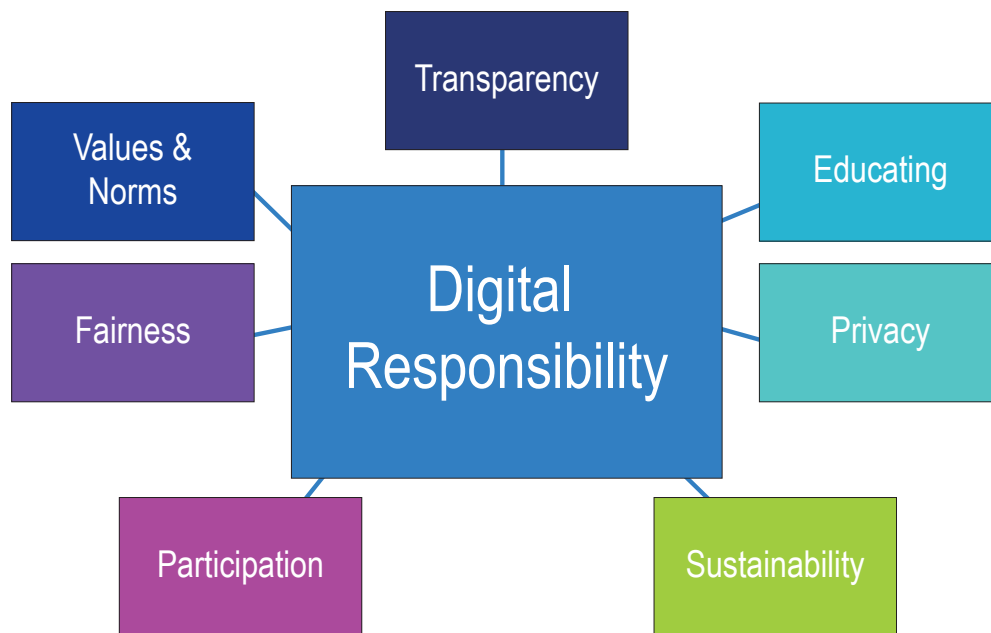


Figure 1: Visualization of the Objectives of Digital Responsibility.

7. Participation: Ensuring easy accessibility of digital resources for all stakeholders without exclusion of marginalized social groups.

This objective emphasizes the importance of easy accessibility of digital resources to all stakeholders without any form of exclusion, especially for marginalized social groups. This includes the development of restriction-free and inclusive systems that cater to the needs of those traditionally underserved, such as users with physical and cognitive limitations. Integral to digital transformation must be the reduction of the digital divide and safeguarding of marginalized user groups. This DR objective also envisions the active participation of users within an open and inclusive society, using inclusive processes that address access requirements of diverse groups, such as senior citizens.

Activities for Implementing Digital Responsibility

We asked the panelists to name activities that the IS community can perform to work towards implementing the objectives of DR mentioned above. Coding these activities led us to identify ten activities on a more abstract level.

1. Take thought leadership to make sense of Digital Responsibility, identify phenomena subject to Digital Responsibility, and understand and conceptualize what Digital Responsibility means.

Even if some advances have been made to conceptualize DR, the concept is still in its infancy. We, the IS discipline, need to start an academic discourse to conceptualize DR and identify its implications for our digital society. Further, we need to identify phenomena related to IS that require the consideration of DR goals and in-depth investigation. Core IS theory needs to be reflected, extended, and revised considering DR. In addition to focusing on our digital society, we must also reflect on the implications of DR for conducting our research activities, which might lead us to adapt the ethical guidelines governing our research. Establishing role models could help convince others that DR is a crucial and worthwhile research topic to investigate across multiple disciplines.

2. Improve our societal relevance to define and join important societal discourses, improve communication with the open public/policymakers/executives, and serve a societal purpose with our research.

The leitmotiv of DR once more highlights that the IS discipline needs to take a more active role in society, joining critical societal discourses and substantiating them with field evidence, theoretical insights, and robust solutions. We could focus on societal goals more strongly in our research to offer a contribution not only to theory and academia but to day-to-day living in our digital society. This goal might motivate us to tackle the grand topics our society faces, going beyond overly reductionist research focused on isolated phenomena. Generating substantially new insights will enable us to participate more actively in societal discourses. An essential prerequisite is improving our communication with stakeholders external to the IS discipline, including policymakers, executives, workers, citizens, and the open public.

3. Promote concrete objectives related to Digital Responsibility, focusing on fairness, inclusion, transparency, and explainability of AI.

Beyond defining what DR means and what ethical stance the IS discipline can take against this backdrop, there is a plethora of immediate research questions touched by the emerging discussion of DR. Our long-standing theories, evidence, and research methods give our discipline a head start to investigate essential topics. We can improve the transparency and

explainability of AI. We can promote values like trust, fairness, and inclusion in the design and use of information systems. We can foster data protection and data sovereignty. We can facilitate individual and societal well-being with IT beyond the immediate profit imperative. And we can promote openness and data sharing, making our research results transparent, inviting others to network with us and build on our results, and increasing the societal reflection of our research.

4. Redesign education to foster Digital Responsibility in IS study programs.

Beyond conducting research, universities are responsible for educating people to be active, informed, and responsible citizens of our digital society. Education should enable citizens to lead self-determined lives and provide for their financial income. Establishing DR is supposed to find its way into our study programs as part of the canonical topics we teach. Therefore, we first need to reconsider the implications of DR in our basic study programs on a bachelor's and master's level. Second, we should reflect on the impact of executive education programs to transfer our insights to the workforce of companies and public institutions. Third, we might consider extending doctoral programs and promoting DR as a topic for special issues in journals and conferences. Once the topic unfolds on a broader scale, we might also encourage workshops, conferences, and new academic journals as focal points for academic research and teaching related to DR.



5. Collect field evidence on Digital Responsibility to objectify and un-bias societal discourses revolving around Digital Responsibility and consider sustainability implications of information systems.

The emergence of DR is part of a larger societal discourse that involves many related topics. At times, this discourse is not entirely objective, relates improperly to field evidence, and is permeated by societal objectives that people or groups want to implement. As researchers, we must inform this discourse by collecting field evidence in line with high standards. We need to evaluate this evidence crucially to un-bias and objectify societal discourses revolving around DR. Since our discipline's core focus is information systems, we could focus on identifying sustainability implications of information systems, and vice versa, on the shaping of

information systems by DR. Both aspects might also lead us to research information systems that are currently underrepresented, to increase our discipline's impact on creating a digitally responsible society.

6. Join a societal discourse to (re-)define values and norms that govern what Digital Responsibility means to respect European values and laws but avoid bias in favor of white Western thinking.

We need to promote a societal discourse to identify the role that norms and values related to DR must play in designing, managing, and using information systems. Still, values cannot be absolute but might contradict each other or have adverse implications. One interesting paradox is related to European values finding their way into the design, management, and use of information systems. On the one hand, as Europeans, we can agree that we want societal values like sovereignty, data protection, equality, and freedom to be inscribed into and promoted by information systems. On the other hand, we strive to go beyond biased thinking about information systems that is too laden with values from our cultural area. We need to inspect this duality in more depth, promote value where warranted, and avoid implementing bias into our research for the wrong reasons. We must be mindful of these dark-side effects and study DR neutrally.

7. Investigate phenomena related to Digital Responsibility on a more complex, systemic level, focusing more on the interplay of humans and IT.

Information systems are complex socio-technical systems, including technology, organizations, and people. Identifying the role of information systems with DR is, therefore, a complex research endeavor that needs to be performed in ways that respect the complexity of the phenomenon under study. Investigating phenomena in an overly reductionist way might be a conflict if the phenomenon is irreducible from the whole that is studied. To grasp DR fully, we must focus more on theorizing the interplay between humans, IT, and organizations. Moving from individual users or organizations to entire ecosystems of platforms or data spaces will allow us to trace the phenomenon on a more holistic and systemic level. Multi-method studies can foster deeper insights, although they will also lead to more complex and unwieldy contributions to be considered for publication in our most respected academic journals and conference proceedings. Thus, reviewers, editors, and chairs must go the extra mile to judge their quality.

8. Develop new design knowledge to enable responsibility by design and to make a difference.

Beyond shaping what DR is by analyzing phenomena with empirical research and fostering societal discussions, we need to use our discipline's knowledge and skills to design IT artifacts that incorporate and promote DR. Therefore, we have to include the goals and values of

DR in the design process itself, including the evaluation of designed artifacts. However, even if we might propose guidelines that attempt to implement DR by design, there is no guarantee that the designed artifacts will be used responsibly, foster DR, and make a positive difference. Thus, we need to consider the context of these designed IT artifacts, including the more complex interplay with people, organizations, and society.

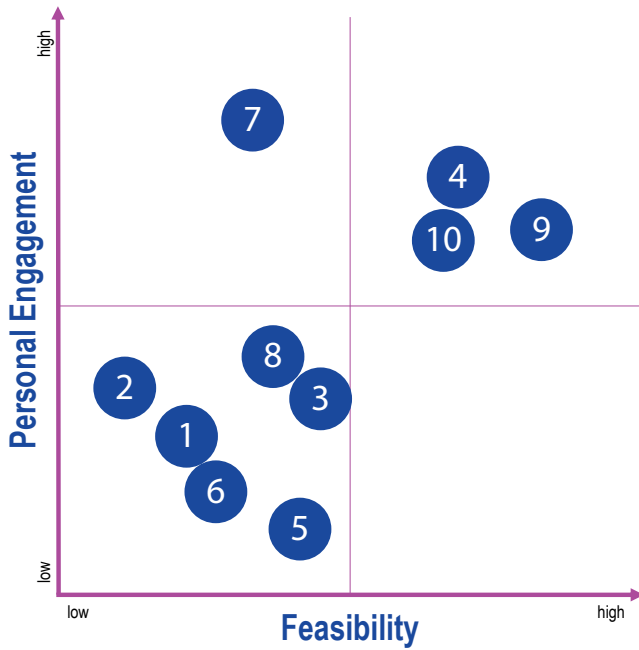
9. Cooperate more with researchers from other disciplines and regions to reflect established IS concepts and theories.

Investigating complex phenomena benefits from including multiple viewpoints. So does promoting societal change on a broad basis. While many idiosyncratic properties that shape our discipline—including the acceptance criteria of our top journals—limit us from cooperating with researchers from other disciplines, researching DR in-depth warrants cooperation on a broader level. We must seek complementary expertise from other disciplines, epistemological standpoints, and regions to make our research more holistic and effective. Building new ties with researchers from underrepresented communities might be a promising perspective. We need to do more to establish boundary conditions that foster interdisciplinary research, including new funding opportunities, a more inclusive publication culture, and an appreciation for unexpected methods and results. Promoting multidisciplinary research also implies a willingness to challenge taken-for-granted insights prevailing in our discipline to challenge and extend concepts and theories in IS.

10. Cooperate more with stakeholders outside science, moving beyond established channels with companies/practitioners/users, societal actors/NGOs, and policy-makers/decision makers.

Beyond the sphere of research, there is a strong imperative to cooperate with other stakeholders on DR. Essential peers for leading a fruitful dialogue include users, practitioners, societal actors, non-government organizations, policymakers, and politicians. Schools, teachers, and pupils can be additional decisive allies. More intensive cooperation with these stakeholders can enable us to establish norms and values related to DR, identify and analyze phenomena lending themselves to DR, and design new IT artifacts to promote a more responsible future. To foster inter-sectoral cooperation, we need to establish more incentives and resolve obstacles hindering collaboration. As a relatively small research community, we must persist in approaching other communities. Our voices should be heard, and our profound research results should be discussed to promote positive change.

Activities for Promoting Digital Responsibility



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| 1 | Understand and Conceptualize Digital Responsibility |
| 2 | Take Thought Leadership to Join Public Discourses |
| 3 | Promote Objectives of Digital Responsibility |
| 4 | Re-design Education |
| 5 | Collect Field Evidence for Objectivity |
| 6 | (Re-)Define Values and Norms in Society |
| 7 | Investigate Digital Responsibility on a Systemic Level |
| 8 | Develop Knowledge for Responsibility by Design |
| 9 | Cooperate with Interdisciplinary Researchers |
| 10 | Cooperate with Stakeholders outside Academia |

Personal Engagement: "To what degree are you planning to engage in this activity as a researcher (versus assuming a passive observer position)?" on a scale from 1 ("I will not engage myself actively in the short-term.") to 4 ("Engaging myself actively is (or will be) my top priority.").

Feasibility: "How easy or difficult is it to engage in this activity as a researcher (in order to contribute do digital responsibility)?" with answers ranging from 1 ("very difficult") to 7 ("very easy").

Figure 2: Activities for Promoting Digital Responsibility Subject to Personal Engagement and Feasibility.

Challenges Inhibiting Digital Responsibility

Every change process can be subject to barriers and challenges that stand in the way of implementing new values and norms. We asked the panelists to identify, prioritize, and rank challenges that run counter to achieving DR objectives and performing the associated activities.

1. Strong economic/profit orientation of organizations

A key challenge for achieving DR is most organizations' pronounced economic and profit-oriented focus. This focus is often underpinned by a preference for short-term gains, fostering responsible behavior primarily when it coincides with tangible financial benefits. This challenge is perceived as the most difficult to address as a researcher who aims to promote DR. Instead, it is primarily the responsibility of organizations to address this challenge, albeit with governments also having to contribute to steering toward a more responsible digital landscape.

2. Lack of incentives and difficulties in publishing interdisciplinary research

The absence of incentives and the hurdles surrounding the publication of interdisciplinary research is a significant challenge. Academic journals often fail to accommodate the multidisciplinary nature of research efforts related to DR. This is compounded by limitations imposed by established publication metrics and lists, making interdisciplinary research a risky endeavor, especially for early-career scholars. Although addressing this challenge is viewed as complex, IS researchers and the overarching scientific community are seen as collectively responsible for orchestrating actions to mitigate this challenge.

3. Disagreement about the goals and priorities of IS research

The disagreement concerning the goals and priorities of IS research poses a challenge to fostering DR in IS research. The challenge is prioritizing across topics and finding consensus on what is most important to IS researchers. While addressing this challenge is the responsibility of our IS research community, the feasibility of doing so is seen as moderate.

4. The current mindset of many societal actors

This challenge revolves around the prevailing perceptions of societal stakeholders, including the acceptance of the existing status quo, difficulty in changing entrenched structures and cultural norms, and the widely spread perception that individual efforts may have no discernible impact. This challenge is exacerbated by a commonly low awareness of DR issues and a lack of active participation. Addressing this challenge presents significant difficulties for

(IS) researchers due to its complexity and multi-faceted nature. Instead, the responsibility for mitigation lies primarily with individual consumers, users, and governments and, to a slightly lesser degree, with organizations.



5. The tendency of IS research to respond to technology trends rather than shape digital transformation

Another challenge is that IS research tends to react to prevailing technology trends rather than proactively shaping digital transformation. IS research often takes the role of an observer rather than an architect in shaping the digital landscape. The panelists see this challenge as relatively straightforward, and the responsibility for mitigation lies clearly without IS community.

6. Difficulties in changing/transforming existing structures in organizations and behaviors of individuals

A significant challenge is to bring about change within existing organizational structures and individual behavior patterns. This challenge encompasses several dimensions, including the complicated nature of redesigning established organizational structures, the resistance to redesign efforts within organizations, the potential need for behavioral change among stakeholders, and the phenomenon of vested interests influencing decision-making in network partnerships. The attempt to mitigate this challenge is seen as complicated for (IS) researchers. It thus lies primarily with organizations and businesses and, to a slightly lesser degree, with individual consumers or users.

7. Complexity of the „Digital Responsibility“ concept

A challenge arises from the complexity of the concept of DR. For example, key concepts such as sustainability and fairness have multiple definitional facets and dimensions that illustrate the complicated landscape. The challenge also extends to the organizational realm, where the complexity of DR comes into play. Addressing the challenge by clarifying the DR concept is perceived as relatively straightforward, and the accountability is with us as IS researchers.

8. Difficulty and complexity of conducting interdisciplinary research

Another challenge is the conduct of interdisciplinary research, which has multiple dimensions, ranging from the hurdles of initiating multidisciplinary research projects to actively collaborating with colleagues from different disciplines in a challenging interdisciplinary research environment to the current lack of robust multidisciplinary discourse. Despite the complicated nature of this challenge, the resolution is perceived as relatively easy, and accountability is seen with our community to lead the effort to address this problem.

9. Deficits in education

This challenge encompasses educational gaps in various areas, such as sustainability, digital literacy, and technical skills. There is a significant need to enable individuals to contribute to developing and managing digital technologies more responsibly. This challenge is perceived as the easiest to mitigate, and accountability lies primarily with IS researchers and governments.

10. Insufficient funding

This challenge manifests in inadequate funding, including the scarcity of resources and the lack of concerted efforts to secure public financing for relevant DR projects. Mitigation, from a researcher's perspective, is seen as somewhat tricky, and responsibility for mitigation falls primarily on government agencies.

11. Missing awareness concerning ethics and legal aspects in the IS community

This challenge manifests in a lack of knowledge of ethical and legal considerations among IS researchers. While IS researchers have a significant role in creating increased awareness in this area and thus contribute to addressing this challenge, mitigation by researchers is rated with moderate feasibility.

12. Lack of diversity in research and practice

The limited participation and inclusion of minority groups in IS research and practice is a fundamental challenge as it perpetuates existing inequalities. Those are underpinned by socio-demographic imbalances and the vestiges of elitism that still permeate the academic system. Paradoxically, despite its multi-faceted nature, the panelists perceive the diversity challenge as moderately solvable. Here, the responsibility lies primarily with our IS community, which plays an essential part in shaping a diverse and integrative environment.

Method and Tools Applied for our Delphi Study

A Delphi study is a method that synthesizes expert opinions to address complex and uncertain problems through iterative rounds involving a panel of selected experts (Paré et al., 2013). In each round, panelists anonymously provide their opinions and insights on a specific topic or research question. After each round, responses are compiled, summarized, and redistributed for further feedback. Originating in eliciting security concerns in the US military (Dalkey & Helmer, 1963), Delphi studies have been applied across various research disciplines and contexts in IS research. Delphi studies benefit consensus-building in a larger community and future forecasting in uncertain environments (Skinner et al., 2015).

Our Delphi study aimed to identify objectives, activities, and challenges related to DR within the IS community. The 18th International Conference on Wirtschaftsinformatik (WI23), held in Paderborn, Germany, with the leitmotiv „Digital Responsibility: Social, Ethical, Ecological Implications of IS“ provided the starting point for our study. We invited the chairs of all 20 tracks responsible for the conference’s scientific program to participate in the study, resulting in a panel of 75 experts. While answers were collected anonymously, only previous panelists were invited to successive rounds. Scholars participating in all three rounds were included as authors of this report if they provided their consent.

Our study comprised three rounds conducted through online questionnaires designed to (1) identify, (2) structure, and (3) prioritize items. Thus, we employ a ranking-type Delphi study (Paré et al., 2013). Each round’s questionnaire was pre-tested with the conference chairs of WI23 before distribution. The first round aimed at identifying objectives, activities, and challenges related to advancing DR in IS research. After outlining the DR concept (Trier et al., 2023), an exploratory questionnaire with open-ended questions – one for objectives, one for research activities, and one for potential challenges – was employed. A total of 48 track chairs participated in the first round. Inductive analysis through open coding revealed 14 objectives to foster DR in future digital transformation, 42 activities and approaches to achieve DR objectives in IS, and 25 challenges hindering the promotion of DR in IS.

In the second round, we focused on consolidating the identified objectives, activities, and challenges. For each category, panelists were presented with a list of the previously identified items in a random order and asked to select the most relevant ones. In each category, panelists could choose up to 50% of the available items, a maximum of seven objectives, 21 activities, and 12 challenges. In this round, 42 scholars participated, selecting their most relevant objectives, activities, and challenges. Data analysis identified the items with the most votes per category, resulting in seven objectives, ten activities, and 12 challenges. Although we allowed additional ideas to be contributed, the panelists did not use this opportunity. The third and final round prioritized and refined the objectives, activities, and challenges.

Panelists were tasked with ranking the items in each category based on relevance. For objectives and challenges, they were asked to assess the feasibility of achieving the objectives or mitigating each challenge as a researcher and the parties accountable for doing so. For activities, panelists evaluated the feasibility and their anticipated engagement. This paper presents the results for the objectives, activities, and challenges ordered by mean rank.

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