

The Impact of Technology Frame Alignment on Effective Implementation and Use of a Digital Press Archive

Bashaer Alrukaibani
Leeds University Business School,
The University of Leeds, Leeds
bnbalr@leeds.ac.uk

Professor Chee Yew Wong
Leeds University Business School,
The University of Leeds, Leeds
C.Y.Wong@leeds.ac.uk

Dr Manish Shukla
Leeds University Business School,
The University of Leeds, Leeds
M.Shukla@leeds.ac.uk

Abstract

Previous research suggests that stakeholder groups hold distinct technology expectations, which shape their engagement with technology, referred to as ‘technology frames’. Aligning these frames is essential for achieving effective technology outcomes. While much of the literature treats technology frames as static, this study adopts a dynamic, process-based perspective informed by Thomas’s (1992) conflict resolution model. This study explores how an organisation aligns technology frames to achieve effective technology use, focusing on a digital press archive that preserves cultural heritage. Data was collected from diverse stakeholders through interviews and document analysis, using an interpretive case study. Findings reveal multiple frame misalignments, which were addressed through alignment approaches including avoidance, compromise, competition, accommodation, and collaboration. A dominant frame was found to contribute to ineffective technology use. By adopting a dynamic process perspective, this study contributes to the technology frames literature, providing insights into achieving stakeholder alignment in technology implementation and use.

Keywords: Technology frame, effective technology use, stakeholder alignment process, case study, qualitative research.

Introduction

The concept of technology acceptance and use serves as the foundation for one of the most impactful types of research in information systems (IS) literature (Davis, 1989; Ajzen, 1991; Orlikowski, 1992; Venkatesh et al., 2003). Understanding this concept is even more critical with recent technological innovations, including artificial intelligence (AI), which are changing how organisations create and capture value in today's global world (Ågerfalk, 2020; Wang et al., 2021). However, ‘technology per se can’t increase or decrease the productivity of workers’ performance, only the use of it can’ (Orlikowski, 2000 p. 425). Although the invaluable contribution of that research is the understanding of how to get people to use technology, use alone is not enough to get performance benefits (Seddon, 1997).

As our reliance on technology continues to increase, the use of technology must also be effective to achieve the desired outcomes (Marcolin et al., 2000; Mishra et al., 2012; Burton-Jones and Grange, 2013). Effective technology use is defined as leveraging technology in a way that helps attain the goals of using that technology (Burton-Jones and Grange, 2013). It plays a key role in healthcare organisations by significantly enhancing patient health outcomes (Burton-Jones and Volkoff, 2017; Abouzahra and Ghasemaghahi, 2022). Furthermore, it bolsters information access and enables the seamless dissemination of information to people (Kudyba, 2020). However, effective technology use is a subjective concept, varying among different groups in how they perceive it to harness its power (Davidson, 2002; Orlikowski and Gash, 1994; Spieth et al., 2021). This is crucial because effective technology use is a socio-technical process that involves diverse groups of individuals (Bednar and Welch, 2020).

A stream of research suggests that stakeholder groups have their own assumptions and knowledge regarding technology that informs their views on its use, which refers to the term ‘technology frames’ (Orlikowski and Gash, 1994; Davidson, 2002; Lin and Silva, 2005). Technology frames are defined as: ‘that subset of members’ organizational frames that concern the assumptions, expectations, and knowledge they use to understand technology in organizations’ (Orlikowski & Gash, 1994, p. 178). It is important to establish common principles aligning their technology frames to cultivate a shared understanding among diverse stakeholders and to avoid any conflict that might occur (Azad and Faraj, 2011; McGovern and Hicks, 2004; Yeow and Sia, 2008). The absence of such understanding may result in misalignment towards technology use (Orlikowski and Gash, 1994; Davidson, 2006; Wang et al., 2021; Minkinen et al., 2023). We define alignment in technology frames as the congruence of frames, not identical but sharing a common understanding (Orlikowski and Gash, 1994).

Despite numerous appeals for a process-oriented perspective (Mishra and Agarwal, 2010; Seidel et al., 2020; Wang et al., 2021; Lundberg et al., 2022), certain studies applied process designs yet analysed frames as static snapshots, failing to address frameshifts (Orlikowski and Gash, 1994; Lin and Cornford, 2000). As such, further research is required to investigate cognitive frameshifts, their association with misalignment, and their outcomes throughout time (ElSawy and Pauchant 2002; Davidson, 2002). Some researchers argue that a framework centred on sensemaking processes is beneficial for examining why participants’ interpretations may evolve, further unpacking the outcome of the process (Davidson, 2002; Lin and Silva, 2005; Azad and Faraj, 2008; Olesen, 2014). To supplement the knowledge, this paper puts forward the alignment process by analysing alignment approaches based on Thomas’s (1992) conflict resolution scheme. This scheme assists us to explain how alignment is initiated, negotiated, and shared. Specifically, the research question of this paper is: *How does an*

organisation manage the process of aligning technology frames to achieve effective use of technology?

This research focuses on digitalisation of a press archive that is unique because it deals with cultural heritage data that is often real, unique, and irreplaceable, and they have long-term social value for people and holds a temporal depth (Bleibleh and Awad, 2020). An interpretative, in-depth case study examines the unique case of *TechOrg* (name disguised), a technology organisation in a Gulf country seeking to effectively use technologies in its digital projects, specifically its digital press archival project. This paper contributes to the technology frames perspective by adopting a dynamic process to aid our theoretical understanding of how effective technology use is achieved. Furthermore, it provides practice-based theory summaries of recommendations to key stakeholders in the MENA region.

The subsequent section examines the theoretical foundation of technology frames, connecting it to effective technology use and its alignment process. A description of the data collection and analysis methods follows. The findings and discussion demonstrate changes in technology frames. Finally, conclusions are presented, covering the study's contributions and limitations.

Literature Review

Effective Technology Use and Technology Frames

Previous research suggests the importance of identifying subtypes of technology use in specific contexts due to the versatility of technologies and the different ways researchers can study them (Burton-Jones and Straub Jr, 2006). One subtype among many, albeit the most crucial, is effective technology use. Burton-Jones and Grange (2013) defined effective use as utilising technology to achieve desired outcomes, considering the context and purpose of its use. Although effective use depends on the technological context, goals are inherently tied to the context. Several researchers have noted this lack of focus on goals and context and have proposed alternative frameworks, such as Mishra et al.'s (2012) concept of 'assimilation,' to represent effective use. In contrast, effective use places a significant emphasis on goals and considers them an integral part of any study of technology in the post-acceptance process.

Whilst effective technology use is related to achieving the desired outcome, the theoretical gap primarily revolves around managing diverse stakeholders' perspectives and expertise in technology use. This concept is related to the term 'technology frames,' which refers to the social dynamics influencing stakeholders' perceptions of technology use. Notably, the technology frame perspective emphasises the dynamics involved in the sense-making process (Orlikowski and Gash, 1994; Davidson, 2002; Allen and Kim, 2005). Every stakeholder holds different assumptions and knowledge about technology, which shape their perspectives regarding its use. For example, employees' fear of technology can impede innovation, while suppliers' diverse technological preferences may hinder engagement with technology. Therefore, organisations must bridge this gap and cater to specific needs and expectations for effective technology use.

Technology frames are important in this context because different stakeholders' perceptions play a role in its use over time. Their input, behaviours, and reactions over the use process determine the outcomes. The technology frames perspective views technology as formative in an ongoing sensemaking process by which stakeholders assign meaning to the technology

based on their own frame, thereby developing a trajectory for its use in a specific setting (Orlikowski and Gash, 1994; Davidson, 2002; Davidson, 2006; Cornelissen and Werner, 2014).

Seminal studies by Orlikowski and Gash (1994), Davidson (2002), and more recent contributions of Spieth et al. (2021) have thoroughly advanced understanding of technology frames. Orlikowski and Gash (1994) identified three primary domains to provide a framework for organising investigations whilst studying technology frames: the nature of technology, technological strategy, and technology-in-use. The nature of the technology domain encompasses stakeholders' understanding of technology, including its potential, functionality, and capabilities. Technology strategy refers to stakeholders' perceptions of the motivations and why it should be implemented. The technology-in-use domain focuses on stakeholders' everyday use of technology and the consequences it has on their experiences.

A few studies have examined technology frames as latent constructs with varied approaches. Mishra and Agarwal (2010) distinguish between benefit frames, threat frames, and adjustment frames, and measure these constructs using multiple items. However, their operationalisation is focused on market-related interpretations and this overlooks the technology-centred perspective of technological frames (Spieth et al., 2021). On the other hand, Spieth et al. (2021) develop measurement instruments that establish a theoretical and methodological basis for forthcoming studies on technology frames. This instrument underwent a rigorous scale-development procedure comprising five steps and samples. The resultant measurement instrument evaluates five separate yet interconnected aspects of an individual's technology frame: personal attitude, application value, organisational influence, industrial influence, and supervisor influence. While Ghobadi and Mathiassen (2023) suggests a cognitive method to systematically explore and compare technology frames using causal mapping.

Prior research has primarily investigated the role of frames in the development, implementation, and use of technology. Technology development studies examine how various perspectives of stakeholders involved in the development process and determining requirements (Davidson, 2002; Davidson, 2006; Chakraborty et al., 2010). Other studies concentrate on technology implementation within organisations, taking into account aspects like organisational culture, power dynamics, and resistance to change, to navigate inconsistencies (Orlikowski and Gash, 1994; McGovern and Hicks, 2004; Lin and Silva, 2005; Azad and Faraj, 2008; Yeow and Sia, 2008; Hsu, 2009; Azad and Faraj, 2011; Hsu et al., 2014; Olesen, 2014; Lundberg et al., 2022). Furthermore, some studies focus on technology use (Mishra and Agarwal, 2010; Mazmanian, 2013; Wang et al., 2021).

El Sawy and Pauchant (1988) emphasised the need for a deeper comprehension of the processes underpinning cognitive frame shifts more than three decades ago because technology frames are fluid, with various social groups interpreting technology differently over time. Frame transformation is also required when frames: 'may not resonate with, and on occasion may even appear antithetical to, conventional lifestyles or rituals and extant interpretive frames' (Snow et al., 1986, p. 473).

Although there have been repeated calls for a process perspective (Mishra and Agarwal, 2010; Seidel et al., 2020; Wang et al., 2021; Lundberg et al., 2022), some studies employed process designs, but presented frames as a static snapshot and did not address frame shifts or explicitly incorporate process concepts (Orlikowski and Gash, 1994; Lin and Cornford, 2000). As such, our understanding of the frame transformation process is limited.

Technology Frames Alignment Process

Nadler and Tushman (1980) introduced the concept of congruence and provided a definition of alignment as ‘the degree to which the needs, demands, goals, objectives, and/or structures of one component are consistent with the needs, demands, goals, objectives, and/or structures of another component’ (p.45). Alignment is the process of coordinating actions or conditions to work together harmoniously. Hence, organisations engage in interactions aimed at adjusting their future activities and resources in accordance with one another (Mulford, 1984). These interactions may encompass a sequence of behaviours, including the sharing of information, exerting influence, and adapting to achieve mutual agreement.

However, needs and demands may not always be consistent, leading to conflict. Diverse stakeholder groups are likely to hold varying opinions regarding their technology use, and understanding such differences is key while studying technology frames. The differences in the frames can be referred to as incongruence, or misalignment, which is the variations between groups’ perspectives regarding technology use. On the other hand, a frame inconsistency represents conflicting expectations held by a group or individual (Orlikowski and Gash, 1994; Young et al., 2016).

Misalignment can be defined as the overall level of opposition or disagreement in any relationship, either between individuals or groups of people, expressed as the frequency, duration, and intensity of such opposition (Wall Jr and Callister, 1995; Wong and Johansen, 2008). This opposition stems from disparities in terms of perceived goals and unfairness. Misalignment of technology frames may result in challenging outcomes including misunderstanding and conflicting behaviour (Lin and Silva, 2005; Azad and Faraj, 2008; Lundberg et al., 2022). In contrast, other studies argue that misalignment per se is not problematic if it motivates organisational members to negotiate shared frames for technology functionality, avoiding political contests (Yeow and Sia, 2008; Azad and Faraj, 2011). Furthermore, misalignment can play a vital role in fostering cross-functional collaboration during the innovation process (Vaccaro et al., 2011; Van Burg et al., 2014), and facilitating learning (Anthony, 2018; Seidel et al., 2020).

Previous literature investigating the process of evolving frames has focused on how the alignment of frames occurs. For instance, Orlikowski and Gash (1994) examined the frame alignment process, offering a narrow perspective of static frames in a short duration of 5 months. Furthermore, Azad and Faraj (2008) investigated how stakeholders negotiate frames into an aligned ‘truce frame’ surrounding a new technology using three translation processes: frame differentiation, adaptation, and stabilisation. The first of these, *frame differentiation*, is the process by which stakeholders with divergent viewpoints engage in conversation. In some studies (Kaplan and Tripsas, 2008), this initial variation is referred to as ‘the era of ferment’, highlighting the inevitability of diverse viewpoints in organisations implementing technology.

The second process, *frame adaptation*, occurs when stakeholders initially hold conflicting frames rooted in their interests and assessment procedures (Azad and Faraj, 2008). Over time, they may adjust their frames and move towards a *truce frame*, which is a state in which negotiations, displacements, and transformations result in a mutually accepted perspective. Some groups of stakeholders who are strongly committed to their current work methods and administrative processes gradually realised that these are not inviolable. Conversely, stakeholders advocating reform-oriented objectives may withdraw demands for unmodified implementation. Kaplan and Tripsas (2008) called this process convergence on a dominant

frame. A dominating frame persuades other social groupings to accept (or at least not resist) its viewpoint. Studies show dominant technology frames held by a specific group, such as users (Barrett, 1999), IT professionals (Lin and Cornford, 2000; Lin and Silva, 2005), and management (Davidson, 2002; McGovern and Hicks, 2004; Davidson, 2006; Olesen, 2014; Young et al., 2016). Others found various individuals dominated at different times (McCloughlin et al., 2000), while some found no dominant frame (Bjørn et al., 2006).

Finally, *frame stabilisation* is the process by which the truce frame gradually develops into a state of relative stability in an emergent manner (Azad and Faraj, 2008). Kaplan and Tripsas (2008) referred to this process as ‘the era of incremental innovation’. Although distinct frames are abandoned throughout this process, conflicts between some stakeholder groups may persist, albeit less intensely.

While the technology frame research reviewed underlined interpretive alignment processes, the IS literature on technology frame and framing does not fully examine how misalignments are dealt with, resulting in remaining inadequately investigated in technology frame research (Davidson, 2002; Lin and Silva, 2005; Azad and Faraj, 2008; Olesen, 2014). Previous studies provided a static picture of frames. Neither study directly investigated frame alignment approaches, leaving this aspect relatively ambiguous.

To resolve misalignment, previous researchers proposed different relationship structures. Wong and Johansen (2008) developed a framework for the coordination process in the buyer-supplier relationship, identifying interactive coordination cycles of assessment, re-derivation, re-offer and negotiation occurred when disagreements arose, causing deviation from the initial sequence. Their focus on closer coordination that integrated joint evaluation and solution derivation, decreased the need for iterative coordination cycles. They used Thomas (1976) scheme to explain such process. Though not derived from IS research, it opened an avenue for applying a similar approach to the technology frame literature.

Thomas (1976) outlined five common relationship structures for dealing with conflict: collaborative, accommodative, competitive, sharing and avoidant. These relationship structures are based on a two-dimensional categorisation: the first is assertiveness, where the aim is to deal with stakeholders’ willingness to address their own concerns, and the second is cooperativeness, where the aim is to deal with its willingness to address other concerns.

This scheme can enrich the understanding of the process in many ways. First, it addresses many conflict-resolution approaches in any context, shaping the alignment process. Second, it captures the diversity of causal influences on competing stakeholders. Third, it was constructed using variables obtained from various research on interdepartmental conflict (Thomas, 1992). Table 1 shows the five conflict resolution approaches based on Thomas’s (1992) scheme.

Table 1. Conflict resolution approaches proposed by Thomas (1992)

Conflict resolution approach	Explanation
1. Collaboration	This relationship structure allows conflict to be resolved between two parties, leading to a win-win situation. It involves straightforward communication with the utmost declaration.
2. Accommodation	This relationship structure is applicable in situations where a stakeholder's desire to address their own concerns is unassertive, but their desire to address other concerns is cooperative.
3. Competition	This is the opposite of accommodation where a stakeholder's desire to address their own concerns is assertive and ignores the concerns of others.
4. Sharing or compromising	This approach is most appropriate for resolving issues of moderate importance. The aim is to reach a prompt, mutually agreeable solution that partially addresses the needs of both sides.
5. Avoiding	This relationship structure ignores and diverts attention away from conflict when it develops. It is a passive reaction to conflict handling, and is considered the opposite of collaboration.

Prieto-Remón et al. (2015) suggested that the choice of conflict resolution approach should be determined by the specific characteristics of the issues being contested and the time-sensitive nature of project delivery. Although this literature review supports the theoretical foundation of the alignment process, further investigation is still needed concerning the conflict resolution approaches of different technology frames, especially in relation to the effective technology use. Next, we discuss the methodology we used to address the research gap.

Methodology

Case description

This research employs an interpretative, in-depth case study (Stake, 2005). The study draws upon a unique case study of a single project to implement a digital press archive, preserving the country's cultural heritage and social history. This project was selected because it was identified as challenging in the entire region. As such, it presents some interesting IS research phenomena that need further investigation.

This project was implemented by TechOrg (a pseudonym for a government technology organisation) in a Gulf County. It is one of the leading organisations at the forefront of technology use in the region and has been responsible for e-government projects since 2006. Furthermore, TechOrg is central to the government's efforts to build a digital economy and ensure the sustainability of digital projects.

A year after its establishment, TechOrg began the planning phase for the project, one of its first initiatives. By 2008, TechOrg started implementing the project. To support this, TechOrg has developed a strategy and a clear work plan for selecting print media from each press to advance the intellectual content of the country's knowledge production.

In 2018, the project was launched as a trial at TechOrg but faced significant challenges from MediaOrg (a pseudonym for a private media organisation), leading to its suspension. In 2023, MemoryOrg (a pseudonym for a library) assigned control to facilitate effective project replanning.

Case design

We developed an initial grouping strategy with distinct technology frames by selecting participants representing various stakeholder groups. Wilson and Howcroft (2005) use the concepts of relevant social groups to identify organisational groups that share the common meaning of artefacts. We employed purposive sampling to select two main stakeholder groups: internal and external stakeholders. These groups were further developed after the initial analysis round to explain the use patterns in each group (Bjørn and Ngwenyama, 2009). This study went on to identify four main stakeholder groups: (1) management, (2) IT, (3) IT governance (as internal stakeholders), and (4) external supplier groups, which served as categories for data analysis.

Data sources

The data collection process involves multiple data sources, including interviews and document analysis, to minimise bias and provide strong evidence (Stake, 2005). We focused data collection within a specific timeframe to enable a comprehensive view of a particular project. Our data collection took place over a 12-month duration (December 2023–January 2025). It had two primary stages: (1) gathering published data on the projects and (2) conducting interviews with diverse stakeholder groups. The data collection stages started by identifying the key milestones associated with project planning, project launch, and any other significant milestones that impact its progression. Based on these significant events, we created a timeline. Following that, we conducted a total of 16 semi-structured interviews with both internal and external stakeholders. The interviews lasted from forty minutes to around an hour and a half (an average of an hour) and were tape-recorded when permitted. We used snowball sampling within the stakeholder group to expand the participants, encompassing a range of technology-related experiences. The participants were recruited from each stakeholder group until saturation was reached.

The interviews were conducted in Arabic. The primary author participated in all data collection and was deeply engaged in the case. The second and third authors did not engage in data collection and acted as valuable ‘outsiders’ during the data collection and analysis phases (Klag and Langley, 2013). The first interview and some important documents were translated into English to ensure valuable guidance and knowledge from the second and third authors, which is an important part of the inductive approach. Participants shared written documents, and we collected others throughout the research for triangulation (Klein and Myers, 1999; Saunders et al., 2016). Our documents comprised over 100 files, including PowerPoint slides, reports, training material, project brochures, relevant press releases, laws, and YouTube videos.

Data analysis

We employed an abductive approach, continually comparing the emerged data themes with the existing literature (Merriam and Tisdell, 2015). We started inductively using a grounded theory method (GTM). We adhered to the “Straussian” approach of GTM (Strauss and Corbin, 1998). We used MAXQDA for analysis. We applied temporal bracketing to make sense of these codes and to construct a theoretical narrative (Golden-Biddle and Locke, 2007). The following section will discuss in more detail the project’s findings.

Findings

Project timeline and key events

In 2006, *TechOrg* was established as part of a broader digital transformation. *TechOrg* began project planning in 2007 to preserve the cultural heritage through a digital archive of print media. Phase one involved converting the microfilm technology - an authentic tool viewed from a legal perspective, but difficult to access. Project implementation followed a multi-phased approach based on the gradual digitisation. Implementation spanned four phases (2008-2018), each incrementally digitising print media assets. However, the IT group within *TechOrg* reported a changed experience and, therefore, decided to resist project implementation. In 2017, management outsourced the fourth implementation phase. Over ten years, nine million print media were digitised, with 90% completed in the final phase.

TechOrg launched a trial in December 2018, receiving nationwide approval. However, in January 2019, the project was frozen following a court warning over *MediaOrg*'s digital archive use. *MediaOrg* sued for copyright infringement, arguing the archive was a derivative work. In 2020, the court ruled in *MediaOrg*'s favour, ordering compensation.

Despite setbacks, revival efforts resumed in 2023 through government collaboration. A 2024 ruling favoured *TechOrg*, though litigation continues. The project is now being redefined with broader governmental support. Figure 1 illustrates the project's timeline.

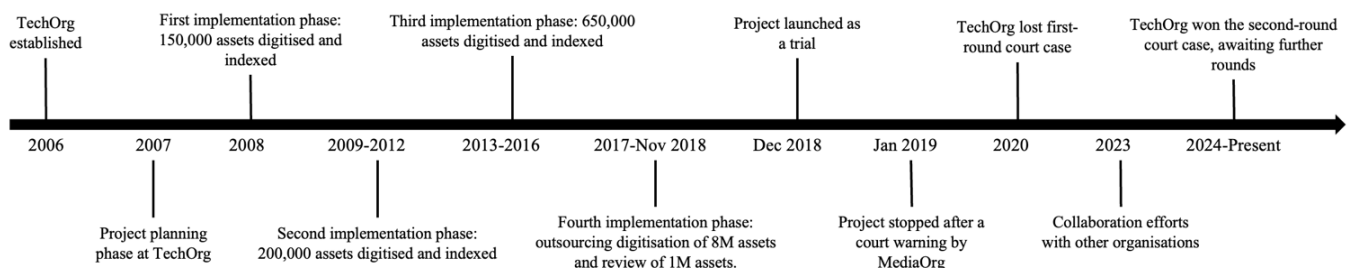


Figure 1 Timeline of the project's key events

Changes in the technology frame

The impact of shifting technology frames on the project implementation and use is discussed below. Table 2 represents the changes in stakeholders' technology frames.

Table 2 Technology frames and shifts for the main stakeholder groups

Project phase		Project implementation		Project use		
		Project initiation and early implementation (2006-2012)	Project later implementation and outsourcing (2013-Nov 2018)	Project trial (Dec 2018)	Legal challenges and ongoing developments (2019-Present)	
Internal stakeholders	Project manager	Initial benefit frame			Negative frame	Share frame
	Upper management					
	IT	Initial mixed frames: benefit & negative	Negative frame	Benefit frame	Share frame	
	IT governance	N/A			Benefit frame	Share frame
External supplier	Professional	N/A		Benefit frame		
	Commercial (MediaOrg)	N/A		Initial benefit frame	Negative frame	

1. Management group

1.1 Project manager

Initial benefit frame

The project manager wanted a project for efficient data preservation, protection, and access to information of national and cultural significance. The project manager expected a comprehensive collection for the larger goal of national identity formation and consolidation. Reflecting on this strategic vision, the project manager said: “*A strategic project for [TechOrg] ... to formulate a national information base.*” (Project manager, YouTube Interview)

This expectation of benefit frame was illustrated by multiple archived interviews on YouTube, which demonstrate her personal pride in this prestigious personal project for her, as a key originator of the project concept. Interviews are solo; one IT individual standing with her gives little input, simply rephrasing her answers when directly addressed by the TV presenter. In an excerpt from project launch interview, she said:

“We have a national database that includes about 9 million news, articles, and topics with plans of increasing to reach 12 or 18 million.” (Project manager, YouTube Interview)

However, her positive view relied on expectations of smooth progression and valuable output. She sought to expedite the project as a pilot, emphasising enhanced productivity for the project's success and user feedback. Her optimistic perspective was reinforced by external

recognition: “*The project found an echo [positive impressions.. there were comments on Twitter and outside [the country]].*” (Participant 2, Management)

Frameshift to negative frame

The project manager’s initial positivity and over-confidence shifted to a negative frame due to legal setbacks and project stagnation. She faced unexpected resistance, especially from MediaOrg, which viewed the project as private asset rather than public good. Despite their initial benefit frame, MediaOrg’s commercial interest emerged:

“[MediaOrg] is owned by economic families with business model vision but they are not specialised in journalism... Electronic advertising became the first source of income. Number two is archive subscriptions.” (MediaOrg Management, YouTube interview)

These competing public and commercial frames “competed” by going to court, which resulted in the project being frozen:

“They were cooperative [no objection/no complain] in the beginning.. Then it seems that a legal person told them that there is money in it, so they filed a lawsuit.” (Participant 2, Management)

Overconfidence led to underestimating the legal and operational challenges, with the frozen project marking the point at which the vision of digital transformation shifted to one of prestige and personal benefit. The project manager’s frame dominated until outsourcing in 2017, excluding the IT group. As challenges grew, her enthusiasm faded amid external resistance, ultimately leading to her retirement to “avoid” conflict with no clear succession plan.

Share frame

The project manager’s technology frame faced pressure to change, especially after the pilot’s outcome. A key frameshift occurred when she retired instead of pursuing solutions to revive the project. Collaboration efforts are now underway, with new management proposing a project transfer to the library, a shared frame supported by other groups.

1.2. Upper management

Initial benefit frame

The management group initially viewed the project as beneficial to the nation, aligning with their e-government goals. They expected it to provide a reliable tool for preserving cultural information, reflecting their loyalty to the nation and public frame: “*The goal was to have an official, reliable and governmental place.*” (Participant 1, Management)

Furthermore, management’s positive view is rooted in his expectation of service improvements driven by pride, competition, and a desire for state services to outperform private ones.

Frameshift to negative frame

However, upper management struggled to appoint a new project manager due to the previous manager's centralised decision-making. The previous section (project manager's technology frame) shows project manager as power-grabbing. This led to the project being outsourced to an external contractor due to the organisation-wide management decision.

Share frame

Due to the difficulty in appointing a new manager, negotiated and collaborative activities became essential. The new management of TechOrg gathered all stakeholders' experiences, carefully selecting a new direction for the project. They redefined its purpose to align with the frames of other groups. For example, knowing the supplier group's concerns about cost, need, and legal effects, management focused on addressing these issues through collaboration with MemoryOrg, a shared approach among internal stakeholders.

2. IT group

Initial mixed frames

During the initial implementation phase, the IT group had mixed frames, benefit and negative. Most of the IT group had a benefit frame rooted in the expectation of improved digital content access and quality. This includes improved searchability for outputs to be OCR, not just images:

"The goal of this project was to convert it into searchable PDFs using OCR for easier access, unlike microfilm technology." (Participant 4, IT)

Most of the IT group had initial enthusiasm about the project, except for "Maha". Her initial negative frame was grounded in an expectation that her knowledge of business and management studies was inadequate. As a "Documents and information specialist", without a pure IT graduate, she feared that the complexity of coding and programming tasks would disrupt her engagement, despite her passion for the project.

Initial implementation misalignments arose between the project manager and "Maha", who thought her knowledge was insufficient for project implementation. In contrast, the project manager thought the system did not need a lot of experience. Alignment was attempted by project manager, motivating Maha. The alignment approach during this phase was accommodation, as Maha "accommodated" project manager expectations and proceeded with project implementation despite her initial fears.

The IT group adopted a passive role in the project, attempting to meet with the project manager to influence her frame, but their efforts failed. The project manager continued to dominate with her perspective, driven by extreme hierarchy and poor leadership. Her pride and desire to make the project a personal achievement warped the dynamics, prioritising control over collaboration and marginalising the IT group. This caused a misalignment between the project manager and the IT group, who, despite concerns, "compromised" by continuing to work on the project.

First gradual frameshift to negative frame

The IT group was the first stakeholder group to alter its frames in 2013. During the later implementation phase (2013-November 2018), the IT group gradually shifted its perspective as they experienced several challenges. Initially infrequent, complaints became more common over time and led to a significant project reconfiguration. The IT group was the only stakeholder group to experience a gradual frameshift, influenced by six key areas.

First, misalignment between job titles and actual responsibilities resulted in frustration, as team members perceived their tasks as mere "data input," below their seniority. This misalignment also contributed to resistance toward assigned roles, suggesting that such tasks should be delegated to lower-ranking employees. Second, technical difficulties with OCR recognition quality and digital noise, particularly for Arabic and older media, led to dissatisfaction with the project's output. Third, the IT group's work overload as the project progressed, which worsened their dissatisfaction. Fourth, prolonged exposure to repetitive digital data entry tasks led to both physical and psychological distress:

"The computer was old. It kept shutting off when I entered data. I got angry, hit the keyboard, and did the work again." (Participant 5, IT)

Fifth, training and development were ineffective with limited training opportunities, often lacking practical value. Lastly, inadequate financial incentives and lack of recognition further demotivated the team.

Despite the project manager's high ambition, barriers to completion persisted. While she claimed that TechOrg had a strategic vision, the IT group felt this vision hindered their ability to drive the implementation. They developed a negative view of the project manager's work, experiencing her dominant technology frame as restrictive.

These challenges reshaped the IT group's technology frame, shifting from initial optimism to a negative view. By 2017, the IT group's frame overtook the project manager, who refused to continue implementation. This shift led to the decision to outsource the project, driven by management. The IT group adopted an "avoidance" approach, refusing to complete the work, prompting upper management to outsource it for quicker and cheaper implementation. The IT group's complaints led to a comprehensive reconfiguration of the project.

Second frameshift to benefit frame

After the pilot and the project manager's departure, the IT group's frame shifted, shaped by a new organisational culture. They came to value the project's national importance, presenting at various conferences. However, they regretted missed opportunities for negotiation when MediaOrg went to court. After losing the first round, they were asked to "collaborate" with the IT governance group to address the lack of legal proof. A key moment of collaboration was forming the "investigative committee" to verify the stop date using log files. The IT group viewed Google Analytics as a reliable technology to prove the pilot project's visitor rate, helping win the second round of the court case through collaboration with multiple stakeholders.

Share frame

Collaboration within the organisation was insufficient to complete the project. Collaboration efforts are now underway with other governmental organisations, and further rounds await completion in court. The new management influenced this shared frame to explore alternative ways to complete the project.

3. IT governance group

Although the IT governance group were involved in later project phases, their benefit frame remained consistent. Despite being of low computer literacy, the IT governance staff played a crucial role in liaising between the organisation-wide and external stakeholders, helping to mitigate problems. The IT governance group's positive view was rooted in national and pan-Arab pride and in the sense of being leaders and trailblazers in the field.

Their positive view is rooted in belief that state-sponsored work, without profit motive, will produce work that is (1) technically better because not skewed by profit motive, (2) strategically better because able to stick to a single strategic vision and (3) better executed because staff on the project have a sense of commitment, rooted in the vision of public benefit.

Their role was particularly evident during the court case, where they worked to rectify legal issues. In their narrative, they concentrated on the non-technical aspects of the project and sought to persuade management and IT groups as reflected in this quote: *"We went back to the contract and examined obligations and times."* (Participant 7, IT governance)

These legal challenges were easier if there was early integration between legal and technical teams: *"If we had a legal and technical team from the start, I expect it would not have escalated."* (Participant 7, IT governance)

From the IT governance group's perspective, internal collaboration was insufficient to complete the project. With support from new management, the internal stakeholders shifted toward a *shared frame* that emphasised external collaboration with other governmental organisations, exploring alternative pathways to finalise the project.

4. Suppliers group

4.1. Professional suppliers

When the project trial launched in December 2018, all supplier groups initially viewed it as beneficial. Professional suppliers, with their adherence to journalistic standards and expertise in the media industry, maintained a consistently positive frame. This perspective was grounded in their understanding of the shifting media landscape, where print media was declining and social media became more dominant. They saw the project as a reliable tool to combat unreliable online sources and misinformation. The shift towards faster, concise digital content made digital archives essential to ensure accuracy and credibility:

"Everyone has a Twitter or Instagram, as new channel where they can post anything... but not everything is credible.... all people have phones. They will be forced to turn to these projects." (Participant 9, professional supplier)

This benefit frame of the professional frame remained unchanged throughout. Professional suppliers consistently valued digital archives for their role in centralising information access. Despite the legal implications, some professionals within MediaOrg held different perspectives, emphasising the ubiquitous access. This internal difference led to a division, two professional journalists leaving the organisation, while others staying because of their loyalty to MediaOrg. Some professionals left the organisation rather than negotiating a shared understanding, “avoiding” conflict.

4.2. Commercial supplier (MediaOrg)

Initial benefit frame

Initially, the *MediaOrg* group had a benefit frame over the project rooted in its professional frame. This aligned with the expectation of “public benefit over personal gain”, as the project was intended for public use without any financial benefits. MediaOrg’s positive view was based on background of the shifting media landscape, with print declining and social media becoming more dominant.

A sudden frameshift to negative frame

In January 2020, MediaOrg experienced a sudden shift in its technology frame, driven by profit motives, leading to a freeze on the project. Initially, MediaOrg did not object, but once they realized the financial benefits, their view changed. They saw the project as a valuable asset, akin to gold, in the context of the information revolution. However, they emphasised demand-supply sustainability as crucial for the long-term viability of the digital archive. Their “commercial frame” stemmed from the fact that economic families owned the organisation.

In 2019, following the promulgation of the Copyright and Related Rights Law, MediaOrg sought to protect its rights and financial interests. While legal concerns were important, some participants also aimed to “dominate the market” and “negatively impact competing organisations.” MediaOrg saw the project as a tool for branding and visibility:

“[MediaOrg] its spread is not local, or Gulf, it was Arab, international... the number of visitors to the electronic website is increasing year after year. The world is changing very fast in this field.” (Participant 11, Commercial supplier)

Ultimately, *MediaOrg*’s “competition approach” led them to initiate legal objections regarding digital data use.

Discussion

This study proposes an iterative process model for aligning technology frames. We propose a cyclical process model of technology frames alignment. This framing lifecycle consists of four interconnected phases, as shown in Figure 2 below:

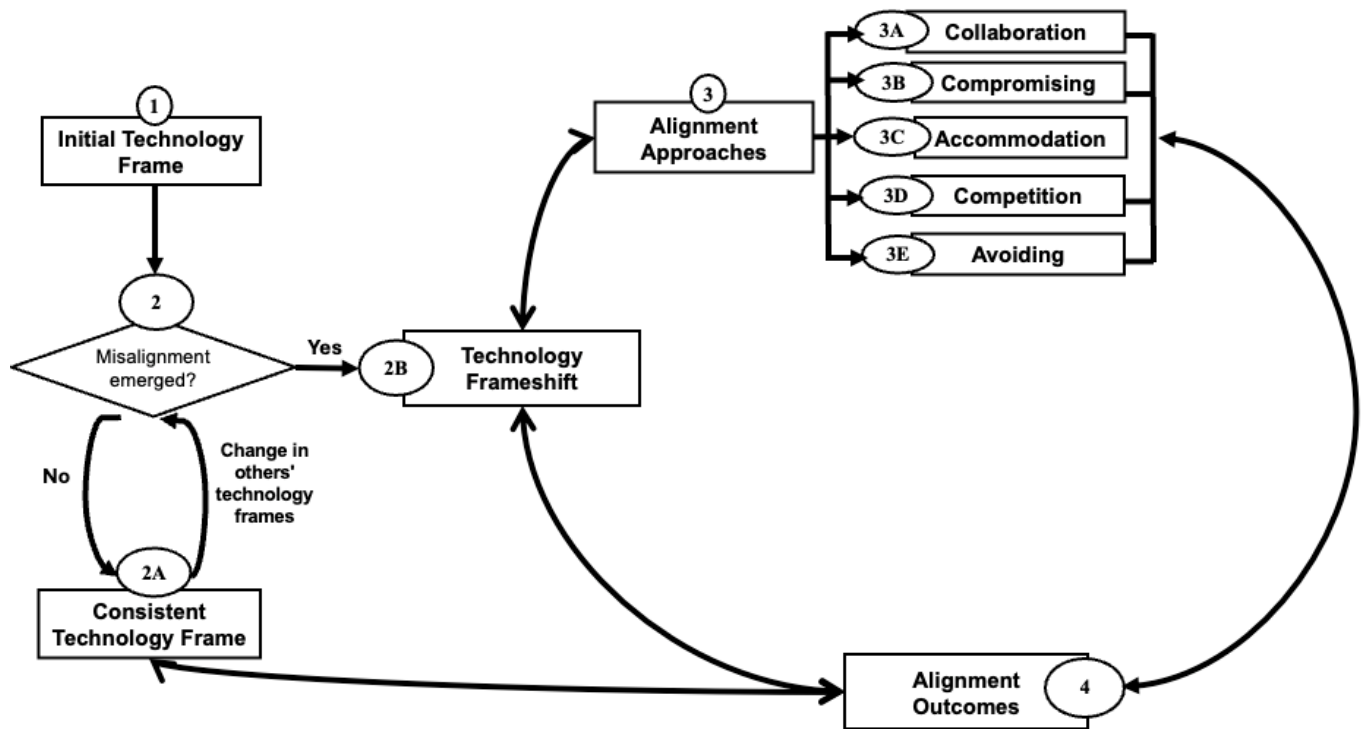


Figure 2 Technology frame alignment process

Phase one: Formation of initial technology frames

Stakeholders enter projects with pre-existing experiences and organisational loyalties that shape their initial technology frames. While prior literature often treats frame differentiation as a static snapshot (Azad and Faraj, 2008; Orlikowski & Gash, 1994; Lin & Cornford, 2000), our findings suggest these frames are dynamic, driven by their institutional logic and situated rationalities, producing early differences that shape how they engage with technology.

Phase two: Emergence of misalignment

As the project progresses, these initial differences may crystallise into frame misalignments. Consistent with Orlikowski and Gash's (1994) notion of "incongruence," we found that misalignment often becomes visible after continued use, when the technology no longer aligns with evolving goals. While no misalignment may indicate shared understanding, shifts in other stakeholders' frames can still lead to delayed misalignments. Our process model accounts for these recursive shifts through feedback loops that capture the re-emergence of misalignment.

Phase three: Alignment approaches

In response to misalignment, stakeholders adopt distinct alignment strategies, ranging from avoidance and competition to compromise, accommodation, and collaboration. Building on

Thomas's (1992) conflict management schema, our findings contribute a typology of alignment approaches grounded in empirical evidence, as shown in Table 3. This extends existing technology frame literature by articulating how alignment is attempted rather than stating that alignment is required (Azad & Faraj, 2008; Yeow & Sia, 2008; Hsu et al., 2014). These strategies are influenced by the presence of a dominant frame and organisational culture.

Table 3 Alignment approaches

Alignment approach	Description	Outcome
Accommodation between one IT group and project manager	The project manager encouraged one IT group to accept her role, despite fear of technical demands of coding during the project initial phase.	The IT group member accommodated and began implementing the project with other IT team members overcoming her fear.
Compromise between IT group and project manager	IT group adapted to project manager's decisions despite limited involvement.	This led to temporary alignment but caused frustration and disengagement among the IT group at a later stage.
Avoidance between IT group and project manager	To speed up implementation, management outsourced the project to external contractor. This avoided internal disagreements but created dissatisfaction among IT group.	Resolved immediate implementation delays but alienated internal IT group, leading to dissatisfaction.
Competition between MediaOrg and TechOrg	MediaOrg competed with TechOrg over financial interests escalating to legal action. This competition highlighted mutual disregard for concerns.	MediaOrg pursued legal action due to the introduction of profit motives, resulting in favourable court outcomes to MediaOrg in the first round.
Avoidance between project manager and upper management	As project faced external resistance, the project manager chose to retire, rather than address misalignments.	The retirement avoided direct conflict but left the project in uncertainty, requiring new alignment efforts involving external organisations.
Avoidance within organisation of MediaOrg	Some professional suppliers saw centralised information access as beneficial, while others focused on profit driven motive.	Two professional journalists left the MediaOrg, while others stayed due to loyalty to organisation.
Collaboration within organisation of TechOrg	During legal disputes, management formed committees comprising IT and governance groups to counter claims.	Improved project defence, leading to favourable court outcomes to TechOrg in the second round.
Collaboration between organisations	Late-stage efforts included collaborative meetings between government and private organisations.	A forward-looking solution to align interests but not fully implemented.

Phase four: Alignment outcomes

The outcome of alignment efforts influences technology use and project success. The alignment process leads to either effective project use and mutual understanding or ongoing misalignment and ineffective use. Importantly, outcomes are not static endpoints, but rather points on an

ongoing cycle. Persistent misalignment triggers a reframing process, while successful alignment provides a platform for iterative improvement.

In this case, the project manager's dominant technology frame led to conflicting interpretations, ultimately freezing the project and resulting in less effective outcomes. This aligns with studies highlighting the conflictual consequences of misalignment (Lin & Silva, 2005; Azad & Faraj, 2008; Lundberg et al., 2022). While some prior research suggests that misalignment can foster shared understanding (Yeow & Sia, 2008; Azad & Faraj, 2011), this study illustrates its potential to fragment understanding when misalignments are unresolved.

Conclusion

Theoretical implications of the findings take a step forward by proposing alignment approaches across stakeholder groups: avoidance, compromise, competing, accommodation, and collaboration. These approaches were derived from Thomas's (1992) scheme. The literature on technology frames does not propose specific approaches. Instead, it provides broad parameters to align the various stakeholder perspectives. However, alignment may not necessarily be achieved in the presence of a dominant frame within an organisation (Bjørn et al., 2006; Olesen, 2014). Nevertheless, the model highlights the analytical requirements of dynamics process and the potential outcomes of frameshifts.

Furthermore, this study examines the technology frames over a much longer period of 20 years. Adopting an extended perspective has demonstrated how these frames can lead to specific outcomes. Earlier studies could not explore this influence on use over such an extended duration. The data were analysed to develop a process model for aligning the primary stakeholder groups associated with the technology frame to address the research question established at the start of the paper. Practitioners must recognise ingrained challenges related to technology use may not be easily resolved. The frame of a dominating social group can profoundly affect the frames of other stakeholder groups.

A limitation of this study is that it is based on a single case study. Such a study is essential to understand the unique peculiarities of a single setting (Svahn et al., 2017). Single-case designs require careful investigation to minimise the possibility of misrepresentation and maximise the access necessary to collect in-depth evidence by looking at multiple stakeholders. Furthermore, the study is not longitudinal, as a longitudinal study requires contemporary data. Unfortunately, we cannot collect data as the project unfolds.

Reference

- Abouzahra, M. and Ghasemaghaei, M. 2022. Effective use of information technologies by seniors: the case of wearable device use. *European Journal of Information Systems*. **31**(2), pp.241-255.
- Ågerfalk, P.J. 2020. Artificial intelligence as digital agency. *European Journal of Information Systems*. **29**(1), pp.1-8.
- Ajzen, I. 1991. The theory of planned behavior. *Organizational Behavior and Human Decision Processes*. **50**(2), pp.179-211.
- Allen, J.P. and Kim, J. 2005. IT and the video game industry: tensions and mutual shaping. *Journal of Information Technology*. **20**(4), pp.234-244.
- Anthony, C. 2018. To question or accept? How status differences influence responses to new epistemic technologies in knowledge work. *Academy of Management Review*. **43**(4), pp.661-679.
- Azad, B. and Faraj, S. 2008. Making e-Government systems workable: Exploring the evolution of frames. *Journal of Strategic Information Systems*. **17**(2), pp.75-98.
- Azad, B. and Faraj, S. 2011. Social power and information technology implementation: A contentious framing lens. *Information Systems Journal*. **21**(1), pp.33-61.
- Barrett, M.I. 1999. Challenges of EDI adoption for electronic trading in the London Insurance Market. *European Journal of Information Systems*. **8**(1), pp.1-15.
- Bednar, P.M. and Welch, C. 2020. Socio-technical perspectives on smart working: Creating meaningful and sustainable systems. *Information Systems Frontiers*. **22**(2), pp.281-298.
- Bjørn, P. and Ngwenyama, O. 2009. Virtual team collaboration: building shared meaning, resolving breakdowns and creating translucence. *Information Systems Journal*. **19**(3), pp.227-253.
- Bjørn, P., Scupola, A. and Fitzgerald, B. 2006. Expanding technological frames towards mediated collaboration. *Scandinavian Journal of Information Systems*. **18**(2), pp.29-68.
- Bleibleh, S. and Awad, J. 2020. Preserving cultural heritage: Shifting paradigms in the face of war, occupation, and identity. *Journal of Cultural Heritage*. **44**, pp.196-203.
- Burton-Jones, A. and Grange, C. 2013. From use to effective use: A representation theory perspective. *Information Systems Research*. **24**(3), pp.632-658.
- Burton-Jones, A. and Straub Jr, D.W. 2006. Reconceptualizing system usage: An approach and empirical test. *Information systems research*. **17**(3), pp.228-246.
- Burton-Jones, A. and Volkoff, O. 2017. How can we develop contextualized theories of effective use? A demonstration in the context of community-care electronic health records. *Information Systems Research*. **28**(3), pp.468-489.
- Cornelissen, J.P. and Werner, M.D. 2014. Putting framing in perspective: A review of framing and frame analysis across the management and organizational literature. *Academy of Management Annals*. **8**(1), pp.181-235.
- Davidson, E. 2006. A technological frames perspective on information technology and organizational change. *The Journal of Applied Behavioral Science*. **42**(1), pp.23-39.
- Davidson, E.J. 2002. Technology frames and framing: A socio-cognitive investigation of requirements determination. *MIS Quarterly*. pp.329-358.
- Davis, F.D. 1989. Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*. **12**(3), pp.319-340.
- El Sawy, O.A. and Pauchant, T.C. 1988. Triggers, templates and twitches in the tracking of emerging strategic issues. *Strategic Management Journal*. **9**(5), pp.455-473.
- Ghobadi, S. and Mathiassen, L. 2023. A Cognitive Method for Comparing and Elaborating on Technology Frames. *British Journal of Management*. **0**, pp.1-25.

- Golden-Biddle, K. and Locke, K. 2007. *Composing qualitative research*. 2nd ed. SAGE Publications.
- Hsu, C., Huang, J. and Galliers, R.D. 2014. Conceptualizing the dynamics of rhetorical practice and technological frame in the context of technology diffusion and adoption. *Information & Management*. **51**(8), pp.984-994.
- Hsu, C.W. 2009. Frame misalignment: interpreting the implementation of information systems security certification in an organization. *European Journal of Information Systems*. **18**(2), pp.140-150.
- Kaplan, S. and Tripsas, M. 2008. Thinking about technology: Applying a cognitive lens to technical change. *Research Policy*. **37**(5), pp.790-805.
- Klag, M. and Langley, A. 2013. Approaching the conceptual leap in qualitative research. *International Journal of Management Reviews*. **15**(2), pp.149-166.
- Klein, H.K. and Myers, M.D. 1999. A set of principles for conducting and evaluating interpretive field studies in information systems. *MIS Quarterly*. **23**(1), pp.67-93.
- Kudyba, S. 2020. COVID-19 and the Acceleration of Digital Transformation and the Future of Work. *Information Systems Management*. **37**(4), pp.284-287.
- Lin, A. and Cornford, T. 2000. Framing implementation management. In: *Proceedings of the 21st International Conference on Information Systems (ICIS)*, Atlanta, GA. Association for Information Systems, pp.221-243.
- Lin, A. and Silva, L. 2005. The social and political construction of technological frames. *European Journal of Information Systems*. **14**(1), pp.49-59.
- Lundberg, O., Nylén, D. and Sandberg, J. 2022. Unpacking construction site digitalization: The role of incongruence and inconsistency in technological frames. *Construction Management and Economics*. **40**(11-12), pp.987-1002.
- Marcolin, B.L., Compeau, D.R., Munro, M.C. and Huff, S.L. 2000. Assessing user competence: Conceptualization and measurement. *Information Systems Research*. **11**(1), pp.37-60.
- Mazmanian, M. 2013. Avoiding the trap of constant connectivity: When congruent frames allow for heterogeneous practices. *Academy of Management journal*. **56**(5), pp.1225-1250.
- McGovern, T. and Hicks, C. 2004. How political processes shaped the IT adopted by a small make-to-order company: a case study in the insulated wire and cable industry. *Information & Management*. **42**(1), pp.243-257.
- McLoughlin, I., Badham, R. and Couchman, P. 2000. Rethinking political process in technological change: socio-technical configurations and frames. *Technology Analysis & Strategic Management*. **12**(1), pp.17-37.
- Minkkinen, M., Zimmer, M.P. and Mäntymäki, M. 2023. Co-Shaping an Ecosystem for Responsible AI: Five Types of Expectation Work in Response to a Technological Frame. *Information Systems Frontiers*. **25**(1), pp.103-121.
- Mishra, A.N. and Agarwal, R. 2010. Technological frames, organizational capabilities, and IT use: An empirical investigation of electronic procurement. *Information Systems Research*. **21**(2), pp.249-270.
- Mishra, A.N., Anderson, C., Angst, C.M. and Agarwal, R. 2012. Electronic health records assimilation and physician identity evolution: An identity theory perspective. *Information Systems Research*. **23**(3-part-1), pp.738-760.
- Mulford, C.L. 1984. *Inter-organizational relations: implication for community development*. New York, NY: Human Science Press, Inc.
- Nadler, D.A. and Tushman, M.L. 1980. A congruence model for diagnosing organizational behavior. *Resource book in macro organisational behavior*. Santa Clara, CA: Goodyear, pp.30-49.

- Olesen, K. 2014. Implications of dominant technological frames over a longitudinal period. *Information Systems Journal*. **24**(3), pp.207-228.
- Orlikowski, W.J. 1992. The duality of technology: Rethinking the concept of technology in organizations. *Organization science*. **3**(3), pp.398-427.
- Orlikowski, W.J. 2000. Using technology and constituting structures: A practice lens for studying technology in organizations. *Organization Science*. **11**(4), pp.404-428.
- Orlikowski, W.J. and Gash, D.C. 1994. Technological frames: making sense of information technology in organizations. *ACM Transactions on Information Systems*. **12**(2), pp.174-207.
- Prieto-Remón, T.C., Cobo-Benita, J.R., Ortiz-Marcos, I. and Uruburu, A. 2015. Conflict resolution to project performance. *Procedia-Social and Behavioral Sciences*. **194**, pp.155-164.
- Saunders, M., Lewis, P. and Thornhill, A. 2016. *Research methods for business students*. 7th ed. New York: Pearson Education.
- Seddon, P.B. 1997. A respecification and extension of the DeLone and McLean model of IS success. *Information Systems Research*. **8**(3), pp.240-253.
- Seidel, V.P., Hannigan, T.R. and Phillips, N. 2020. Rumor communities, social media, and forthcoming innovations: The shaping of technological frames in product market evolution. *Academy of Management Review*. **45**(2), pp.304-324.
- Snow, D.A., Rochford, E.B., Worden, S.K. and Benford, R.D. 1986. Frame Alignment Processes, Micromobilization, and Movement Participation. *American Sociological Review*. **51**(4), pp.464-481.
- Spieth, P., Röth, T., Clauss, T. and Klos, C. 2021. Technological frames in the digital age: Theory, measurement instrument, and future research areas. *Journal of Management Studies*. **58**(7), pp.1962-1993.
- Stake, R.E. 2005. Qualitative case studies. *The Sage Handbook of Qualitative Research*. Thousand Oaks: Sage, pp.443-466.
- Strauss, A. and Corbin, J. 1998. *Basics of qualitative research: Techniques and procedures for developing grounded theory*. Los Angeles, CA: SAGE Publications.
- Svahn, F., Mathiassen, L. and Lindgren, R. 2017. Embracing Digital Innovation in Incumbent Firms. *MIS Quarterly*. **41**(1), pp.239-254.
- Thomas, K.W. 1976. Conflict and conflict management. In: Dunnette, M. ed. *Handbook of industrial and organizational psychology*. Chicago, IL: Rand McNally, pp.889-935.
- Thomas, K.W. 1992. Conflict and conflict management: Reflections and update. *Journal of Organizational Behavior*. **13**(3), pp.265-274.
- Vaccaro, A., Brusoni, S. and Veloso, F.M. 2011. Virtual design, problem framing, and innovation: An empirical study in the automotive industry. *Journal of Management Studies*. **48**(1), pp.99-122.
- Van Burg, E., Berends, H. and Van Raaij, E.M. 2014. Framing and interorganizational knowledge transfer: A process study of collaborative innovation in the aircraft industry. *Journal of Management Studies*. **51**(3), pp.349-378.
- Venkatesh, V., Morris, M.G., Davis, G.B. and Davis, F.D. 2003. User acceptance of information technology: Toward a unified view. *MIS Quarterly*. **27**, pp.425-478.
- Wall Jr, J.A. and Callister, R.R. 1995. Conflict and its management. *Journal of Management*. **21**(3), pp.515-558.
- Wang, C., Medaglia, R. and Jensen, T.B. 2021. When ambiguity rules: the emergence of adaptive governance from (in) congruent frames of knowledge sharing technology. *Information Systems Frontiers*. **23**, pp.1573-1591.

- Wang, C., Teo, T.S.H. and Janssen, M. 2021. Public and private value creation using artificial intelligence: An empirical study of AI voice robot users in Chinese public sector. *International Journal of Information Management*. **61**, p102401.
- Wilson, M. and Howcroft, D. 2005. Power, politics and persuasion in IS evaluation: a focus on 'relevant social groups'. *Journal of Strategic Information Systems*. **14**(1), pp.17-43.
- Wong, C.Y. and Johansen, J. 2008. A framework of manufacturer-retailer coordination process: three case studies. *International Journal of Retail & Distribution Management*. **36**(5), pp.387-408.
- Yeow, A. and Sia, S.K. 2008. Negotiating "best practices" in package software implementation. *Information and Organization*. **18**(1), pp.1-28.
- Young, B.W., Mathiassen, L. and Davidson, E. 2016. Inconsistent and incongruent frames during IT-enabled change: An action research study into sales process innovation. *Journal of the Association for Information Systems*. **17**(7), pp.495-520.