ORIGINAL RESEARCH **Open access**

Digital Task Fragmentation in Modern Organizations: A Theory-Driven Model of Workload Dispersion, Coordination Costs, and Managerial Attention

Tobias Weber[1*], Hanna Müller[1]

Abstract

Modern digital work environments increasingly fracture tasks across email, instant messaging, project platforms, customer systems, shared documents, dashboards, and video meetings. This article conceptualises this condition as digital task fragmentation, defined as the systemic dispersion of work activities across multiple digital tools, communication channels, and organizational interfaces. Unlike traditional interruption or individual multitasking, digital task fragmentation is embedded in the architecture of contemporary work systems. Existing theories of work design, coordination, information processing, and managerial attention explain important aspects of task demands, communication complexity, and cognitive strain. However, they do not fully capture how digitally mediated work fragments tasks across platforms while simultaneously making workload harder to see, sequence, and govern. The result is a growing theoretical gap between how work is formally designed and how it is actually experienced in digitally intensive organizations. The objective of this article is to develop a theory-driven model of digital task fragmentation and its organizational consequences. The model links fragmentation to workload dispersion, coordination costs, managerial attention depletion, and downstream outcomes for productivity, employee well-being, decision quality, and organizational agility. The article positions fragmentation as both a work-design problem and an attention-allocation problem. The article contributes by naming and theorising digital task fragmentation as a distinct organizational phenomenon. It shows how tool proliferation, always-on communication, and hybrid work arrangements disperse tasks and increase hidden coordination burdens. The proposed framework provides a basis for future measurement, empirical testing, and managerial redesign of digital work systems.

Keywords Organizational theory, Digital task fragmentation, Workload dispersion, Coordination costs, Managerial attention, Digital work

*Correspondence:
Tobias Weber
tobias.weber@gmail.com
[1] Department of Digital Strategy and Enterprise Systems, Faculty of Economics, University of Stuttgart, Stuttgart, Germany

Introduction

Modern knowledge work increasingly unfolds through a dispersed digital infrastructure in which employees move continuously between email threads, chat messages, shared documents, workflow boards, video calls, dashboards, and enterprise systems. Research on remote and digitally mediated work shows that collaboration patterns change when work is mediated through digital traces, platform interactions, and distributed communication channels [1]. Digital work therefore no longer appears as a stable sequence of tasks but as a shifting field of partial updates, notifications, requests, and coordination signals that compete for attention.

This article defines digital task fragmentation as the systemic dispersion of work activities across multiple tools, platforms, channels, and interaction spaces. The concept

extends beyond individual multitasking because fragmentation is not merely a behavioural preference or momentary interruption; it is produced by the socio-technical organization of work itself. Studies of digital work and organizational transformation show that digital technologies reshape how work is configured, distributed, monitored, and coordinated across human and technological arrangements [2].

The problem is that current organizational theories often treat workload, coordination, and attention as analytically separable, even though digital work binds them together in daily practice. Work design research has shown that automation, algorithms, and digital systems alter task structures and autonomy, but digital fragmentation adds a further layer by scattering task components across multiple systems and temporal rhythms [3]. As a result, employees may appear connected and responsive while actually operating under conditions of fragmented attention, duplicated effort, and hidden workload accumulation.

The aim of this article is to theorise digital task fragmentation and develop a model that explains its causes and consequences. The argument is that digital task fragmentation generates workload dispersion, raises coordination costs, and depletes managerial attention, thereby affecting productivity, employee well-being, decision quality, and organizational agility. This theoretical model responds to evidence that digitally mediated work can intensify interruptions, emotional exhaustion, and technology-related strain when work systems demand continuous monitoring and rapid switching [4, 5].

Theoretical Background

The attention-based view of the firm provides a foundational lens for understanding why digital task fragmentation matters. Attention-based theory argues that organizational action depends on how decision makers allocate limited attention to issues, answers, and channels of communication [6]. In digitally fragmented environments, the central problem is not only the volume of work but the dispersion of attention across competing digital signals that vary in urgency, visibility, and strategic relevance.

Recent extensions of the attention-based view suggest that attention is situated, socially shaped, and embedded in organizational structures rather than merely located inside individual cognition [7]. This is crucial for theorising digital task fragmentation because fragmented work is produced by shared systems, communication expectations, and platform norms. Managerial attention becomes especially vulnerable when managers must interpret multiple digital streams while also maintaining strategic oversight, role clarity, and coordination discipline [8].

Cognitive load and technostress research further explain how fragmented digital work can overwhelm employees. Information overload scholarship shows that excess information becomes harmful when individuals lack sufficient capacity, filtering mechanisms, or contextual clarity to process it effectively [9, 10]. Similarly, technostress research demonstrates that digital technologies can create strain through overload, invasion, complexity, uncertainty, and constant connectivity, especially when systems expand demands rather than simplifying work [11, 12].

Coordination and task-technology perspectives complete the theoretical foundation by showing that digital tools can both enable and complicate collective work. Remote work studies indicate that digital collaboration can alter communication networks and reduce certain forms of synchronous interaction while increasing reliance on mediated coordination [1, 13]. The theoretical gap is that attention-based, cognitive load, technostress, and coordination perspectives have rarely been integrated to explain how tasks become dispersed across tools and teams as a systemic feature of modern digital work.

Digital Task Fragmentation

Digital task fragmentation is a multidimensional construct that captures how task components are split, relocated, and reassembled across digital environments. It involves tool multiplicity, task switching frequency, communication channel dispersion, information scattering, and temporal discontinuity. Research on digitally challenged organizations shows that digital work can become fragmented when organizational processes, technologies, and user practices are misaligned rather than coherently integrated [14].

Tool multiplicity is a primary source of fragmentation because the same work objective may require employees to consult several platforms before acting. For example, a manager may need to interpret an email request, verify data in a dashboard, locate a file in a shared drive, respond

in a chat channel, and update a project board before a task can be considered complete. Digital work research suggests that such configurations create emergent human-digital work arrangements in which the boundaries of a task are no longer obvious from formal job descriptions [2].

Digital task fragmentation must be distinguished from conventional interruption and multitasking. Interruption refers to a disruption in an ongoing activity, whereas fragmentation describes the structural distribution of a task across multiple systems before any interruption occurs. Studies of technology-mediated interruptions and email-related workplace stress show that digital communication can impose recurring demands, but fragmentation explains why employees must repeatedly reconstruct task context across scattered channels even when no single interruption appears severe [4, 15].

The antecedents of digital task fragmentation include always-on communication norms, remote and hybrid work, tool proliferation, platform-specific visibility, and weak integration across organizational systems. COVID-era remote work research shows that collaboration patterns and workdays changed substantially when employees relied more heavily on digital communication infrastructures [16]. **Table 1** defines the dimensions and sources of digital task fragmentation.

Table 1. Digital Task Fragmentation Dimensions: Sources, Manifestations, and Measurement in Modern Organizations

Dimension of digital task fragmentation	Main organizational source	Typical manifestation in digital work	Poss measu appr
Tool multiplicity	Expansion of email, chat, workflow, CRM, analytics, and document platforms	Employees must consult several systems to complete one task	Numl platf used p cross depen co
Communication channel dispersion	Parallel use of email, instant messaging, meetings, comments, and notifications	Task instructions and updates appear in different communication spaces	Numl char carryin rela inform
Task switching frequency	Continuous notifications, rapid response norms, and fragmented scheduling	Employees repeatedly shift between unrelated work streams	Switch ho interru log applic switchi
Information scattering	Files, decisions, and data stored across disconnected repositories	Employees search across platforms to reconstruct task context	Searcl miss inform incid dupli docu locat
Temporal discontinuity	Asynchronous work, hybrid schedules, and distributed teams	Task progress depends on delayed responses and staggered availability	Resp late unres task du handof
Accountability diffusion	Shared ownership across teams, systems, and managerial layers	Responsibility for task completion becomes ambiguous	Numl respo act escal frequ owne ambi rati

Workload Dispersion across Tools and Teams

Workload dispersion occurs when the effort required to complete work is distributed across multiple tools, teams, messages, and temporal locations. In fragmented digital environments, workload is not fully visible in formal task lists because effort also resides in searching, clarifying, switching, updating, responding, and monitoring. Studies of

workplace digitalization show that digital tools can alter workload over time, not only by adding tasks but by changing how work demands are distributed and experienced [17].

At the individual level, workload dispersion increases cognitive effort because employees must repeatedly recover task context after moving between platforms and communication streams. This creates a form of hidden work in which employees spend time reconstructing what has already been decided, locating relevant information, and determining which digital signal deserves priority. Evidence on remote work design indicates that effective digital work depends on autonomy, feedback, interdependence, and communication design, but fragmented systems can weaken these conditions by dispersing work across poorly aligned channels [13].

At the team level, workload dispersion creates uneven visibility because some work is recorded in formal workflow systems while other work remains embedded in informal chat, email negotiation, or meeting follow-up. Research on enforced remote working shows that digital platform-induced stress can produce exhaustion and reduced subjective well-being when employees must manage multiple digital demands simultaneously [18]. **Table 2** maps the dispersion of workload across digital tools and its effects on individual and team workload.

Table 2. Workload Dispersion across Digital Tools and Teams: Types, Amplifiers, and Cognitive Load Implications

Type of workload dispersion	Digital work source	Organizational amplifier	Individ leve implica
Platform dispersion	Work spread across email, chat, project boards, shared drives, dashboards, and enterprise systems	Low system integration and weak workflow standardisation	Increa search and cognit switch
Communication dispersion	Instructions and decisions distributed across meetings, messages, comments, and informal updates	Always-on responsiveness norms	Difficu identify authorit informa
Temporal dispersion	Work completed across asynchronous schedules and delayed response cycles	Hybrid work, distributed teams, and global time zones	Increa task resump effo
Role dispersion	Task ownership shared across functions, managers, and digital systems	Matrix structures and cross-functional project work	Ambig abou respons and pri
Attention dispersion	Multiple simultaneous digital signals competing for awareness	Notification intensity and rapid response expectations	Reduc capacit deep w and prioritis
Measurement dispersion	Workload visible in some systems but absent from others	Reliance on incomplete dashboards or formal task trackers	Unde recogn of hidd coordin wor

Workload dispersion is therefore not simply a subjective feeling of being busy; it is a structural property of digitally mediated work. The more work is distributed across tools and teams, the more employees must perform integration labour that is rarely counted as productive output. This argument aligns with technostress meta-analytic evidence showing that digital stressors affect outcomes differently depending on context, usage patterns, and organizational conditions [19].

Coordination Costs and Managerial Attention

Coordination costs arise when fragmented work requires additional effort to align tasks, people, information, timing, and accountability. Digital tools are often introduced to reduce coordination effort, but when tools multiply without integration, they can increase the work needed to maintain a coherent understanding of task status. Algorithmic and digital control research shows that new technologies reshape coordination and control, often creating contested terrain around visibility, autonomy, and managerial oversight [20].

One major coordination cost is context re-establishment. Each time a worker or manager moves from one digital stream to another, they must reconstruct the task background, identify the latest decision, and determine whether action is required. Email and digital communication research shows that message-based demands can increase job tension and work-family conflict when employees experience persistent pressure to respond and remain available [21, 22].

A second coordination cost is redundancy. Fragmented organizations often repeat the same information across meetings, emails, chat threads, dashboards, and project-management updates because no single digital space is trusted as authoritative. Information technology use can therefore create both coordination support and technostress, especially when cultural and organizational conditions encourage high responsiveness and heavy monitoring [23].

Managerial attention becomes the key bottleneck in this process because managers must make sense of dispersed work while protecting priorities, resolving ambiguity, and maintaining team alignment. The attention-based view suggests that managerial action depends on which issues receive scarce attention and which are neglected [24]. In high-fragmentation environments, managers risk becoming attention integrators who spend increasing time scanning digital signals instead of interpreting strategic problems.

Organizational Consequences

The first organizational consequence of digital task fragmentation is productivity loss through hidden coordination overhead. Employees may appear active because they are responding, updating, searching, and attending meetings, yet much of this activity compensates for fragmentation rather than advancing substantive work. Evidence from collaboration during the COVID-19 period shows that digital work can lengthen workdays and change meeting and communication patterns, indicating that productivity effects cannot be inferred from activity volume alone [16].

The second consequence is employee strain, exhaustion, and burnout. Technostress research shows that digital systems can produce both productive challenge and harmful distress, but fragmentation pushes digital work toward distress when employees lack control over volume, timing, and channel expectations [11]. Studies of technostress creators and job burnout further suggest that combinations of technology demands and individual conditions can generate burnout risks in complex ways [25].

The third consequence is reduced deep-work capacity and diminished decision quality. Information overload research shows that excessive and poorly structured information weakens processing capacity, while digital task fragmentation adds the further problem that relevant information is scattered across multiple systems [9, 10]. When decision makers cannot easily distinguish signal from noise, they may rely on partial evidence, defer decisions, or respond reactively to the most visible platform rather than the most important issue.

The fourth consequence is reduced organizational agility. Although digital tools are often associated with flexibility and responsiveness, fragmentation can slow adaptation by increasing the time required to coordinate across functions and interpret distributed information. Research on digital footprints and remote work suggests that digital traces can improve visibility, but they can also create new governance challenges when organizations rely on fragmented digital exhaust rather than coherent work-system design [26].

Proposed Theory-Driven Model

The proposed model begins with digital task fragmentation as the antecedent condition. Fragmentation is generated by tool multiplicity, communication dispersion, task switching, information scattering, temporal discontinuity, and

accountability diffusion. Digital work and organizational transformation research supports the view that contemporary work configurations emerge from interactions between people, technologies, structures, and practices rather than from technology adoption alone [2].

The model then identifies workload dispersion and coordination costs as mediating mechanisms. Fragmentation disperses work across platforms and teams, while dispersed work increases the effort required to align information, recover context, and synchronise action. Research on technology-mediated interruptions shows that interruptions affect both work and nonwork outcomes, which supports the model's claim that fragmented work mechanisms extend beyond immediate task performance [4].

Figure 1 presents the proposed theory-driven model showing how digital task fragmentation disperses workload, increases coordination costs, depletes managerial attention, and produces organizational consequences.

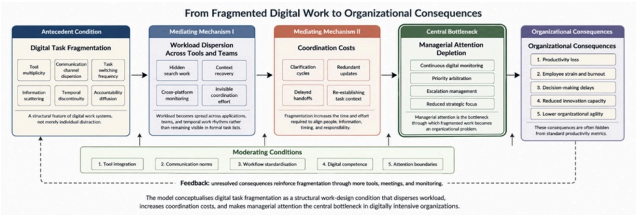

Figure 1. Theory-Driven Model of Digital Task Fragmentation: Workload Dispersion, Coordination Costs, Managerial Attention Depletion, and Organizational Consequences in Modern Digital Work

Managerial attention depletion is positioned as the central bottleneck between coordination costs and organizational outcomes. Managers must absorb fragmented signals, resolve ambiguity, prioritise competing demands, and decide which tasks require intervention. Attention-based research on strategic change indicates that communication and attention dynamics shape organizational adaptation, making managerial attention a critical resource in fragmented digital environments [6].

The model also includes moderators that can weaken or intensify the effects of fragmentation. Tool integration, clear communication norms, digital competence, workflow standardisation, and managerial boundary-setting may reduce the movement from fragmentation to overload, whereas always-on norms and weak governance amplify it.

Table 3 presents the proposed theory-driven model of digital task fragmentation and organizational consequences.

Table 3. Proposed Theory-Driven Model of Digital Task Fragmentation: Antecedents, Mediating Mechanisms, and Organizational Outcomes

Model component	Core theoretical claim	Key mechanisms	Expe organiz effe
Digital task fragmentation	Work becomes structurally dispersed across tools, channels, and temporal settings	Tool multiplicity, channel dispersion, task switching, information scattering	Crea fragme tas environ that re contin integra
Workload dispersion	Fragmented tasks distribute workload beyond visible task inventories	Hidden search work, update work, context recovery, cross-platform monitoring	Mak workl harde measur mana
Coordination costs	Fragmented work increases the effort needed to align people and information	Redundant communication, clarification cycles, delayed handoffs, duplicated updates	Redu producti and s collec execu
Managerial attention depletion	Managers become overloaded by dispersed signals and competing priorities	Continuous monitoring, escalation management, priority arbitration, attention switching	Weak decis qual strategic an responsi
Organizational outcomes	Fragmentation produces cumulative performance and well-being consequences	Productivity loss, burnout, decision delays, reduced agility, lower	Creates organiz costs th difficu detect th

		innovation capacity	stanc metr
Moderating conditions	Governance and design choices shape the strength of fragmentation effects	Tool integration, communication norms, workflow clarity, digital competence, attention boundaries	Can e ampli redu fragmen organiz consequ

The model is theory-driven rather than empirically tested in this article, but it provides a structure for future measurement and hypothesis development. It explains why digital task fragmentation should not be reduced to individual distraction or poor time management. Instead, fragmentation is conceptualised as an organizational design condition that requires coordinated interventions in tools, norms, workflows, and managerial attention systems.

Research Propositions

The first proposition is that digital task fragmentation is positively related to workload dispersion, because tasks distributed across multiple tools and channels require employees to perform additional search, monitoring, and context-recovery work. This relationship should be stronger in organizations with weak tool integration and high responsiveness norms, as research on smartphone use, workplace telepressure, and psychological detachment suggests that persistent digital availability can weaken recovery and sustain work-related attention beyond formal work time [27]. Therefore, future empirical studies should test whether fragmentation predicts perceived workload more strongly than formal task volume alone.

The second proposition is that workload dispersion mediates the relationship between digital task fragmentation and coordination costs. When workload is scattered across platforms and teams, coordination requires more clarification, status reconstruction, and redundancy management. This proposition is consistent with research showing that digital stressors and technology exhaustion emerge when workers must manage multiple platform-based demands, particularly under remote or digitally intensive conditions [18, 28].

The third proposition is that managerial attention depletion mediates the relationship between coordination costs and organizational consequences such as decision delays, reduced agility, and lower productivity. Managers facing fragmented work systems must allocate attention across competing digital signals, which can reduce their capacity for strategic interpretation and timely prioritisation. Future research should also test whether tool integration, communication norms, and digital competence moderate these effects, since technostress mitigation research suggests that users and organizations can adopt practices that reduce technology-related strain [12, 29].

Conclusion

This article has introduced digital task fragmentation as a distinct organizational phenomenon in modern digital work. It has argued that fragmentation is not simply interruption, multitasking, or information overload, but a systemic dispersion of tasks across tools, channels, teams, and temporal work rhythms. By naming this condition, the article provides a conceptual foundation for understanding why digital work can feel simultaneously connected, active, inefficient, and exhausting.

The proposed theory-driven model links digital task fragmentation to workload dispersion, coordination costs, managerial attention depletion, and organizational consequences. Its central contribution is to show that fragmentation creates hidden forms of work that are often invisible to conventional workload measures and productivity indicators. This perspective shifts attention from individual coping alone toward the design of digital work systems, communication norms, and managerial attention structures.

Future research should empirically validate the construct, develop measurement instruments, and test the proposed relationships across hybrid, remote, and digitally intensive organizations. Managers should recognise fragmentation as a work-design issue and mitigate it through better tool integration, clearer ownership rules, communication discipline, and protection of focused attention. Digital work will remain central to modern organizations, but its benefits depend on reducing the hidden costs of fragmented task environments.

Acknowledgements

None

Conflict of interest

None

Ethics statement

None

Financial support

None

Received: 01 Dec 2025 Revised: 15 Jan 2026 Accepted: 01 Mar 2026
Published online: 18 March 2026

References

Yang L, Jaffe S, Holtz D, Suri S, Sinha S, Weston J, et al. How work from home affects collaboration: A large-scale study of information workers in a natural experiment during COVID-19. arXiv preprint arXiv:2007.15584. 2020 Jul 30.

Baptista J, Stein MK, Klein S, Watson-Manheim MB, Lee J. Digital work and organisational transformation: Emergent Digital/Human work configurations in modern organisations. J Strateg Inf Syst. 2020;29(2):101618.

Parker SK, Grote G. Automation, algorithms, and beyond: Why work design matters more than ever in a digital world. Appl psychol. 2022;71(4):1171-204.

Chen A, Karahanna E. Life Interrupted: The effects of technology-mediated work interruptions on work and nonwork outcomes1. MIS Q. 2018;42(4):1023-42.

Cheng X, Bao Y, Zarifis A. Investigating the impact of IT-mediated information interruption on emotional exhaustion in the workplace. Inf Process Manag. 2020;57(6):102281.

Ocasio W, Laamanen T, Vaara E. Communication and attention dynamics: An attention-based view of strategic change. Strateg Manag J. 2018;39(1):155-67.

Brielmaier C, Friesl M. The attention-based view: Review and conceptual extension towards situated attention. Int J Manag Rev. 2023;25(1):99-129.

Ocasio W, Joseph J. The attention-based view of great strategies. Strateg Sci. 2018;3(1):289-94.

Arnold M, Goldschmitt M, Rigotti T. Dealing with information overload: A comprehensive review. Front Psychol. 2023;14:1122200.

Roetzel PG. Information overload in the information age: A review of the literature from business administration, business psychology, and related disciplines with a bibliometric approach and framework development. Bus Res. 2019;12(2):479-522.

Tarafdar M, Cooper CL, Stich JF. The technostress trifecta-techno eustress, techno distress and design: Theoretical directions and an agenda for research. Inf Syst J. 2019;29(1):6-42.

Salo M, Pirkkalainen H, Chua C, Koskelainen T. explaining information technology users'ways of mitigating technostress. In: Proceedings of the 25th European Conference on Information Systems (ECIS); 2017. p. 2460–76.

Wang B, Liu Y, Qian J, Parker SK. Achieving effective remote working during the COVID-19 pandemic: A work design perspective. Appl Psychol. 2021;70(1):16-59.

Davison RM, Ou CX. Digital work in a digitally challenged organization. Inf Manag. 2017;54(1):129-37.

Stich JF, Tarafdar M, Stacey P, Cooper C. Appraisal of email use as a source of workplace stress: A person-environment fit approach. J Assoc Inf Syst. 2019;20(2):132-60.

DeFilippis E, Impink SM, Singell M, Polzer JT, Sadun R. Collaborating during coronavirus: The impact of COVID-19 on the nature of work. NBER; 2020.

Zacher H, Rudolph CW. Workplace digitalization and workload: Changes and reciprocal relations across 3 years. Sci Rep. 2024;14(1):5924.

Singh P, Bala H, Dey BL, Filieri R. Enforced remote working: The impact of digital platform-induced stress and remote working experience on technology exhaustion and subjective wellbeing. J Bus Res. 2022;151:269-86.

Nastjuk I, Trang S, Grummeck-Braamt JV, Adam MT, Tarafdar M. Integrating and synthesising technostress research: A meta-analysis on technostress creators, outcomes, and IS usage contexts. Eur J Inf Syst. 2024;33(3):361-82.

Kellogg KC, Valentine MA, Christin A. Algorithms at work: The new contested terrain of control. Acad Manag Annal. 2020;14(1):366-410.

Becker WJ, Belkin LY, Conroy SA, Tuskey S. Killing me softly: Organizational e-mail monitoring expectations' impact on employee and significant other well-being. J Manag. 2021;47(4):1024-52.

Steffensen Jr DS, McAllister CP, Perrewé PL, Wang G, Brooks CD. "You've got mail": A daily investigation of email demands on job tension and work-family conflict. J Bus Psychol. 2022;37(2):325-38.

Ma Y, Turel O. Information technology use for work and technostress: Effects of power distance and masculinity culture dimensions. Cogn Technol Work. 2019;21(1):145-57.

Joseph J, Wilson AJ. The growth of the firm: An attention-based view. Strateg Manag J. 2018;39(6):1779-800.

Khedhaouria A, Cucchi A. Technostress creators, personality traits, and job burnout: A fuzzy-set configurational analysis. J Bus Res. 2019;101:349-61.

Leonardi PM. COVID-19 and the new technologies of organizing: Digital exhaust, digital footprints, and artificial intelligence in the wake of remote work. J Manag Stud. 2021;58(1):249-53. https://doi.org/10.1111/joms.12648.

Van Laethem M, Van Vianen AE, Derks D. Daily fluctuations in smartphone use, psychological detachment, and work engagement: The role of workplace telepressure. Front Psychol. 2018;9:1808.

Oksanen A, Oksa R, Savela N, Mantere E, Savolainen I, Kaakinen M. COVID-19 crisis and digital stressors at work: A longitudinal study on the Finnish working population. Comput Hum Behav. 2021;122:106853.

Pflügner K, Maier C, Weitzel T. The direct and indirect influence of mindfulness on techno-stressors and job burnout: A quantitative study of white-collar workers. Comput Hum Behav. 2021;115:106566.