

WHEN AI MAKES COWORKERS LESS NECESSARY: RELATIONAL DEPENDENCE AND THE NEW PEOPLE- MANAGEMENT CHALLENGE IN KNOWLEDGE WORK

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Abstract: Generative artificial intelligence (GenAI) is usually framed as a technology that automates tasks, augments workers, and improves productivity. We argue that a different organizational consequence deserves explicit theorization: GenAI can reduce the extent to which successful task completion requires input from another human actor. We define relational dependence of task completion as the degree to which a task requires cognitive, informational, evaluative, communicative, or coordinative contributions from other people. GenAI can partially disintermediate these contributions by supplying advice, drafting, interpretation, rehearsal, feedback, and preliminary sensemaking directly to the focal worker. This does not make employees independent of organizations or technology. Rather, it can make specific task components less relationally mediated. We distinguish this construct from help-seeking, relationship instrumentality, interaction frequency, social capital, and the broader social fabric of organizations. We then develop a task-contingent model of AI-enabled relational disintermediation. The model predicts that informational, cognitive, evaluative, and communicative dependence are more susceptible to GenAI substitution than high-accountability or deeply contextual coordinative dependence. It also proposes that interpersonal interaction cost and employee characteristics such as communication apprehension or introversion shape the likelihood of substituting AI for coworkers. Finally, we theorize a productivity–relationship paradox: the same reduction in relational dependence that improves short-term task efficiency may reduce incidental learning, weak-tie formation, mentoring, expertise visibility, and social-capital accumulation. For human resource management (HRM), the central challenge is therefore not simply to regulate AI use, but to distinguish human interactions that are no longer operationally necessary from those that remain strategically necessary for organizational learning, coordination, and resilience.

Keywords: Generative artificial intelligence; Relational dependence; Knowledge work; Workplace relationships; Human resource management; Help-seeking; Social capital

1 INTRODUCTION

Generative artificial intelligence has entered knowledge work with unusual speed. Research already shows that AI can improve performance on some professional tasks while creating a jagged frontier in which the same technology can also worsen performance when workers rely on it beyond its effective range [1]. Much of the managerial conversation has therefore focused on productivity, augmentation, automation, skill change, and governance. These are important questions, but they can obscure a quieter transformation in the architecture of everyday work: a growing share of work can be completed without involving another person at points where human input was previously routine.

Consider ordinary knowledge-work episodes. A worker who is unsure how to structure an argument might once have asked a colleague. A junior employee preparing a sensitive email might have asked a senior coworker to review the tone. A manager facing an ambiguous problem might have used a colleague as a sounding board. An employee entering an unfamiliar domain might have contacted an internal expert for preliminary guidance. Today, many of these interactions can be postponed, shortened, or bypassed because GenAI can provide a first explanation, draft, critique, alternative, rehearsal, or decomposition of the problem. The change is not merely that the worker receives assistance from a new source. The workflow itself may no longer require a human crossing at that point.

Recent workplace studies show that this relational shift is no longer hypothetical. Employee–GenAI collaboration has been associated with lower perceived instrumentality of coworker relationships and lower helping behavior [2]. Emerging evidence also suggests that AI use can weaken instrumental coworker ties while strengthening expressive ties [3], and conference studies report that employees may prefer AI help because it carries lower social costs than asking colleagues [4–5]. Baygi and Huysman go further, arguing that GenAI can reroute the pathways through which expertise, trust, and collegiality circulate in organizations [6]. Together, these studies establish that GenAI can alter workplace relations. They do not, however, fully specify the task-level property that changes before those relational consequences appear: how much a task itself depends on another human contribution for completion.

We call this property relational dependence of task completion. It is the extent to which successful completion of a task requires cognitive, informational, evaluative, communicative, or coordinative input from another human actor. The construct is deliberately narrower than the social fabric of organizations and broader than help-seeking, see Table 1. It does not ask whether coworkers are friends, whether they interact frequently, or whether employees value relationships

instrumentally. It asks a prior structural question: if access to coworkers were removed from this step of the workflow, could the focal employee still complete the task at an acceptable level? GenAI matters because it can change the answer.

Table 1 Construct Boundaries

Construct	Core question	Level	Distinction
Relational dependence of task completion	Does the task require another human contribution?	Task component	Focal construct
Help-seeking	Does the employee ask another actor for assistance?	Behavior	Observed action, not structural necessity
Relationship instrumentality	How useful is the relationship for goal attainment?	Perception	Subjective value of relationship
Interaction frequency	How often do actors interact?	Behavior/network	Frequency can be high or low independent of dependence
Social capital	What resources are embedded in relationships?	Relational stock	Potential downstream consequence
Social fabric	How do work pathways and resource flows interweave?	Organization	Broader system-level construct

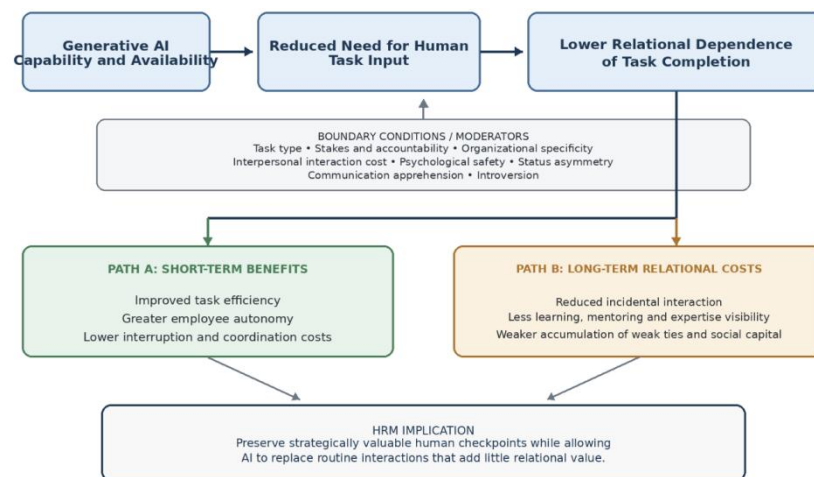


Figure 1 Conceptual Model of AI-Enabled Relational Disintermediation

This article develops a conceptual model of AI-enabled relational disintermediation, see Figure 1. We argue that GenAI can make some human contributions optional rather than mandatory, but that this effect is task-contingent rather than universal. We also argue that the reduction of relational dependence can generate a productivity–relationship paradox. Employees may complete routine knowledge work faster and with lower interpersonal friction, while organizations simultaneously lose micro-interactions through which people learn who knows what, form weak ties, obtain mentoring, build reciprocal obligations, and maintain the visibility of expertise. The HRM problem is therefore not whether to preserve all pre-AI interaction. It is to identify which interactions can safely disappear and which remain strategically valuable even after they become operationally unnecessary.

2 RELATIONAL DEPENDENCE AS A HIDDEN PROPERTY OF KNOWLEDGE WORK

2.1 Knowledge Work Is Relationally Embedded

Knowledge-intensive organizations have long relied on social structures to create, locate, exchange, and recombine expertise. Social-capital theory argues that relationships facilitate the creation and exchange of intellectual capital [7]. Research on transactive memory similarly shows that team performance depends partly on members learning who possesses particular knowledge and how to coordinate access to it [8]. Advice networks, feedback seeking, mentoring, and informal consultation are therefore not peripheral social activities added after the real work is done. In many settings, they are part of how the work becomes possible.

This embeddedness creates multiple forms of relational dependence. Informational dependence arises when a worker needs facts or access held by another person. Cognitive dependence arises when another person contributes interpretation, problem decomposition, or alternative reasoning. Evaluative dependence arises when a worker requires judgment, critique, or validation. Communicative dependence appears when another person helps translate, frame, or tailor a message. Coordinative dependence arises when task completion requires alignment of commitments, responsibilities, timing, or authority across people. These forms often coexist, but they are analytically separable and differ in their susceptibility to AI substitution.

2.2 Relational Dependence Is Not Interaction Frequency

Relational dependence should not be inferred directly from how often people interact. Two coworkers may speak frequently yet remain largely independent in task completion. Conversely, a worker may interact with a specialist only once, but that single interaction may be indispensable because it supplies authorization, tacit knowledge, or expert judgment that cannot be generated elsewhere. Likewise, low help-seeking does not necessarily mean low relational dependence: employees sometimes avoid asking for help precisely because help seeking threatens impressions of competence or autonomy [9]. The construct concerns structural necessity, not observed frequency alone.

Relational dependence is also distinct from relationship instrumentality. Li et al. examine whether employees perceive coworker relationships as useful for attaining goals [2]; that perception can change even when task architecture is held constant. Our construct instead asks whether the task architecture itself requires human input. An employee may value a coworker highly even when AI has made that coworker unnecessary for a particular low-stakes draft. Conversely, an employee may dislike a relationship yet remain highly dependent on the other person's formal authority or tacit expertise. Separating perceived value from structural task dependence is essential for theorizing how AI changes work design.

3 WHY GENERATIVE AI IS DIFFERENT

The claim that technology reduces dependence on other people is not new. Search engines reduced some dependence on librarians and local experts. Spreadsheets reduced dependence on specialist calculators. Email reduced the need for synchronous contact. Workflow systems formalized coordination that had previously required personal communication. A theory of GenAI therefore needs a stronger claim than "technology lets people do more by themselves." The distinctive feature is that GenAI increasingly occupies domains that were previously supplied through interpersonal cognitive contribution rather than through narrowly specified automation.

GenAI can generate and revise language, summarize unfamiliar material, produce alternative framings, role-play a difficult conversation, critique an argument, simulate objections, translate across professional vocabularies, and decompose an ambiguous problem. These are not merely output-producing functions. In organizational life, they have often been obtained through colleagues. GenAI thus acts as a low-friction source of provisional cognitive support. It is always available, does not signal impatience, does not incur reciprocal obligation, and does not expose the user's uncertainty to a human audience. Those features can make AI particularly attractive when the alternative is socially costly help seeking [4-5].

The important qualifier is provisional. GenAI outputs can be wrong, context-poor, or confidently misleading. The jagged-frontier evidence demonstrates that workers can be harmed when they treat AI capability as uniform across tasks [1]. Accordingly, AI-enabled relational disintermediation is not synonymous with safe substitution. A human contribution can become behaviorally bypassed before it becomes functionally replaceable at acceptable quality. This distinction creates a central HRM problem: employees may experience lower relational dependence subjectively even when organizations still require human verification, accountability, or contextual judgment objectively.

4 AI-ENABLED RELATIONAL DISINTERMEDIATION

We define AI-enabled relational disintermediation as the process through which GenAI removes, postpones, or reduces a human interaction that would otherwise have been part of completing a task. In the simplest form, Worker → Coworker → Task Completion becomes Worker → AI → Task Completion. More commonly, the new workflow is Worker → AI → Human if needed. The human actor is not eliminated from the organization but shifted from a mandatory contributor to an escalation resource. This shift matters because repeated micro-substitutions can accumulate into a different relational structure of work.

Proposition 1. Greater GenAI capability for supplying a task-relevant cognitive, informational, evaluative, or communicative contribution will reduce the relational dependence of that task component, provided that employees perceive the AI output as sufficiently usable for the stakes involved.

4.1 The Susceptibility of Different Forms of Dependence

Not all relational dependence is equally susceptible. Informational dependence is relatively substitutable when relevant information can be represented in accessible data or documents. Cognitive dependence is substitutable to the extent that the task benefits from alternative generation, synthesis, decomposition, or generic reasoning rather than deeply embodied expertise. Evaluative dependence is partly substitutable for low-stakes critique and first-pass review but less so when evaluation carries legal, professional, or political accountability. Communicative dependence is often highly substitutable at the drafting and rehearsal stage. Coordinative dependence is the least straightforward because commitments, authority, timing, and mutual adjustment remain inherently distributed across human actors.

Proposition 2. AI-enabled reductions in relational dependence will be stronger for informational, cognitive, evaluative, and communicative task components than for task components requiring reciprocal coordination, formal authority, high-stakes accountability, or deeply organization-specific tacit knowledge.

5 BOUNDARY CONDITIONS: WHO IS MOST LIKELY TO SUBSTITUTE AI FOR COWORKERS?

5.1 Interpersonal Interaction Cost

Employees do not face identical social costs when obtaining help. Asking another person can expose uncertainty, create indebtedness, interrupt a busy colleague, threaten competence impressions, or require navigating hierarchy. Classic help-seeking research shows that concerns about dependence, power, and image can suppress requests even when help is available [9]. GenAI changes the choice set by offering a form of assistance that largely removes these interpersonal costs. The higher the perceived cost of approaching another person, the greater the relative utility of AI-mediated independent completion.

Proposition 3. The positive effect of GenAI availability on relational disintermediation will be stronger when employees perceive higher interpersonal costs of obtaining comparable assistance from coworkers.

5.2 Introversion as a Boundary Condition, Not the Mechanism

Introversion is a plausible but imperfect moderator. Introverted employees may prefer lower-stimulation interaction environments and may derive greater utility from a tool that allows uninterrupted, self-paced problem solving. Yet introversion should not be equated with low social skill, anxiety, or inability to collaborate. More proximal constructs—communication apprehension, fear of negative evaluation, low interpersonal self-efficacy, status asymmetry, or low psychological safety—may explain AI substitution more directly. The theoretical role of introversion is therefore conditional: it may amplify preference for AI-mediated task completion in some contexts, but it should not carry the causal burden of the model.

Proposition 4. Introversion will strengthen AI-enabled relational disintermediation primarily when it is accompanied by higher perceived interpersonal interaction cost; its independent effect will be weaker than that of more proximal interaction-cost constructs.

6 THE PRODUCTIVITY–RELATIONSHIP PARADOX

Reducing relational dependence can be beneficial. Fewer coordination delays, lower interruption costs, and immediate access to drafting or sensemaking support can increase speed and autonomy. For routine or low-stakes work, asking AI before asking a coworker may be an efficient allocation of scarce human attention. Experts may also benefit if repetitive requests are filtered out, allowing them to focus on genuinely difficult problems. From this perspective, relational disintermediation can be a legitimate productivity gain rather than a social loss.

The paradox is that work interactions rarely carry only the resource explicitly requested. A quick question to a colleague may also reveal who knows what, expose a junior employee to tacit judgment, create a reciprocal obligation, transmit context, make expertise visible, or trigger a future collaboration. Social-capital and transactive-memory perspectives suggest that these side effects are organizationally valuable [7-8]. Baygi and Huysman similarly warn that bypassing everyday intersections can weaken the flows of expertise and collegiality [6]. Thus, the disappearance of an interaction can be efficient for the focal task while costly for the relational infrastructure that supports future tasks.

Proposition 5. Lower relational dependence will improve short-term individual task efficiency when AI can supply adequate task-relevant input with lower coordination and social cost than human interaction.

Proposition 6. When displaced human interactions previously generated incidental learning, expertise visibility, weak ties, mentoring, or reciprocal social capital, lower relational dependence will reduce the accumulation of these relational resources over time unless organizations deliberately recreate them through alternative practices.

7 FROM INDIVIDUAL EFFICIENCY TO ORGANIZATIONAL DECOUPLING

At scale, repeated relational disintermediation can produce organizational decoupling between task completion and relationship formation. Historically, many relationships were formed as a by-product of needing one another to get work done. A junior employee learned a senior colleague's expertise because a task forced contact. People discovered complementary knowledge because projects created interdependence. Reciprocity accumulated because assistance moved back and forth. If GenAI removes enough of these operational reasons to interact, organizations cannot assume that the relational outcomes will emerge automatically through work itself.

This does not imply inevitable social isolation. Zhang and Yan report that AI use can weaken instrumental ties while strengthening expressive ties, suggesting that employees may reallocate rather than simply reduce relational investment [3]. The key implication is more subtle: AI can change the basis on which workplace relationships are formed. When instrumental dependence declines, organizations may need to rely more heavily on intentional socialization, mentoring, shared learning routines, communities of practice, or team-based reflection to generate relational resources that were once incidental by-products of task interdependence.

8 IMPLICATIONS FOR HUMAN RESOURCE MANAGEMENT

8.1 Stop Treating All Disappearing Interaction as Efficiency

HRM systems often reward visible productivity gains: shorter cycle times, fewer meetings, lower coordination costs, and greater employee autonomy. In an AI-enabled workplace, these metrics can improve precisely because employees bypass other people. Managers should therefore ask what else was carried by the interaction that disappeared. If the answer is “nothing beyond a routine transaction,” substitution may be desirable. If the interaction also transmitted tacit expertise,

developmental feedback, professional norms, trust, or cross-unit awareness, the efficiency gain may conceal a relational deficit.

8.2 Design Human Checkpoints by Strategic Value, Not Nostalgia

The solution is not to force employees to consult coworkers for tasks AI can handle well. Artificially preserving obsolete interactions would waste human attention and could provoke resistance. Instead, HRM should identify strategically valuable human checkpoints. High-stakes decisions may require expert review. Early-career employees may need structured mentoring even if AI can answer their immediate questions. Cross-functional projects may need deliberate sensemaking sessions so that local AI-assisted work does not produce organizational silos. Communities of practice may become more important when expertise is no longer accessed through routine queries.

8.3 Manage Relational Opportunity, Not Only AI Access

Organizations currently govern GenAI mainly through access, data security, model choice, disclosure rules, and acceptable-use policies. These controls are necessary but incomplete. The present framework suggests an additional HRM object: relational opportunity. Employees need opportunities to encounter expertise, obtain developmental challenge, observe judgment, and form reciprocal ties even when those encounters are no longer required for routine task completion. The people-management challenge is therefore to preserve strategically generative interactions without recreating unnecessary friction.

9 RESEARCH AGENDA

9.1 Measuring Relational Dependence Directly

The first empirical task is construct development. Researchers should measure relational dependence at the task-component level rather than infer it from general AI use or interaction frequency. Survey items could ask whether successful completion normally requires another person's information, interpretation, critique, communication assistance, authorization, or coordination. Repeated measures could then examine whether the same task becomes less relationally dependent after GenAI adoption. This would distinguish structural change in work from simple preference change.

9.2 Experimental Tests of Substitution

Vignette or field experiments can manipulate AI availability while holding task content constant. Participants could choose between asking a coworker, using GenAI, or proceeding alone. Outcomes should include not only completion time and perceived effort but also output quality, error detection, willingness to escalate, learning, and subsequent coworker contact. Such designs can test whether AI reduces interaction because it genuinely substitutes a needed contribution or because employees merely believe that it does.

9.3 Longitudinal Consequences for Careers and Social Capital

The most consequential effects are likely longitudinal. If employees repeatedly solve problems privately with AI, do they accumulate fewer advice ties? Do junior workers receive less tacit coaching? Do experts become less visible and therefore less central in organizational networks? Does AI-enabled self-sufficiency reduce sponsorship, mentoring, or weak-tie formation over time? Conversely, does freed human attention enable higher-quality, more purposeful interaction? These questions require network and career data rather than one-shot attitude surveys.

9.4 Personality and Interaction Cost

Personality should be treated as a boundary condition rather than the core explanatory engine. Future research can test whether introversion predicts stronger substitution after accounting for communication apprehension, fear of negative evaluation, psychological safety, status distance, and job autonomy. This is important because the same AI tool may be liberating for an employee who finds interpersonal initiation costly, merely convenient for another, and insufficient for a worker whose tasks remain highly reciprocal and politically embedded.

10 DISCUSSION

This article contributes to emerging work on GenAI and workplace relationships by shifting the unit of theorization. Prior studies have shown that GenAI collaboration can reduce relationship instrumentality and helping [2], alter instrumental and expressive ties [3], change help-seeking preferences [4], and reroute the social fabric through which organizational resources flow [6]. We complement these perspectives by locating a more proximal work-design mechanism: GenAI can reduce the relational dependence embedded in specific components of task completion. Relational outcomes may follow because fewer human contributions are structurally required, not only because employees evaluate coworkers differently. The framework also clarifies why 'AI-enabled independence' should be used cautiously. Employees do not become independent in an absolute sense. Dependence may shift from coworkers toward models, vendors, data infrastructures, or

organizational AI systems. What declines is a particular form of human relational mediation in task completion. This narrower claim is both theoretically defensible and practically important because organizations can experience a decline in interpersonal dependence even while technological dependence increases.

Finally, the model reframes the HRM challenge. The managerial objective should not be maximum interpersonal contact, nor maximum AI-enabled self-sufficiency. It should be selective preservation of relationally generative work. Some interactions are pure transaction costs and can disappear with little loss. Others are vehicles for apprenticeship, trust, cross-boundary understanding, identity, and social capital. GenAI makes this distinction newly visible because it removes the operational necessity that previously forced many of these interactions to occur together. HRM must now decide which human interactions deserve to be designed back in—not because AI cannot complete the immediate task, but because the organization cannot afford to lose what those interactions produce over time.

11 CONCLUSION

Generative AI may transform knowledge work in a way that is more relational than current productivity debates suggest. By supplying cognitive, informational, evaluative, and communicative contributions that employees previously obtained from other people, GenAI can make parts of task completion less relationally dependent. This change can be beneficial: it reduces friction, saves attention, and expands autonomy. Yet it can also decouple getting work done from the everyday encounters through which organizations reproduce expertise, learning, trust, and social capital. The central people-management question is therefore not whether humans remain valuable in an AI-rich workplace. It is which human interactions remain strategically necessary after AI has made them operationally optional.

COMPETING INTERESTS

The authors have no relevant financial or non-financial interests to disclose.

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