

## AI at Work: Working Arrangements and Human–AI Collaboration

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*This exploratory study examines how AI adoption and AI-related attitudes vary across private-office, open-plan, hybrid, and remote working arrangements among knowledge workers. Drawing on a cross-sectional online survey of knowledge workers (N=60), the study examined associations between four working arrangements and 18 AI-related Likert items using item-level contingency tables, Pearson's chi-square statistics, and Cramér's V. Because sparse expected frequencies were common, conditional Monte Carlo estimates were used as the primary inferential values. Six items showed nominal cross-arrangement associations according to Monte Carlo inference ( $p < .05$ ), with three medium and three large observed association magnitudes. Three preliminary patterns emerged. First, hybrid and remote respondents reported regular AI use more often than private-office and open-plan respondents, and perceived task efficiency showed a similar descriptive distribution. Second, instrumental framing of AI as a task-support tool was widely endorsed across arrangements, whereas assistant-like and collaborative framings varied across groups. Third, the strongest observed associations were organisational: employer provision or permission to use AI tools and reported freedom over AI use both varied across working arrangements. The pattern suggests that organisational conditions, including AI provision and autonomy of use, may help explain higher reported AI use in hybrid and remote arrangements. However, the cross-sectional design cannot distinguish this interpretation from alternatives such as organisational digital maturity, occupational differences, or worker selection.*

**Keywords:** *hybrid work; remote work; human–AI collaboration; workplace layout; knowledge work*

### Introduction

Artificial intelligence (AI), particularly generative AI, has rapidly moved from an experimental novelty to an increasingly common feature of knowledge-intensive work. In occupations centred on writing, analysis, programming, research, coordination, and problem-solving, AI systems now draft texts, summarise information, support ideation, automate routine communication, and scaffold decision-making. Generative AI is no longer confined to technical specialists: professionals in software development, consultancy, and management report using these tools for productivity, learning, and task completion, while navigating issues of trust, professional identity, and human agency (Koponen, 2024). Emerging organisational research also indicates that generative AI can reshape collaboration patterns and knowledge flows rather than simply improve isolated individual productivity, making AI adoption a fundamentally social and relational process (Büchsenschuss et al., 2026). While the evidence of AI's

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impact on human collaboration is mixed and may yield both positive and adverse effects on, e.g., interaction and effectiveness (Vaccaro et al., 2024), human collaboration patterns are nevertheless being affected by AI as it takes on roles such as coordinator, creator, perfectionist, and doer, altering division of labour and expectations in teams (Siemon, 2022; Behnad & Hodjat, 2025).

This transformation has unfolded alongside another major shift in the organisation of work: the normalisation of remote and hybrid work arrangements after the COVID-19 pandemic. Knowledge-intensive sectors have moved from treating remote work as an exception to adopting stable hybrid models, even as many employers have sought to restore office attendance through return-to-office mandates (Bloom et al., 2024; Smite et al., 2022). These directives are often justified by claims about productivity, collaboration and culture, yet the evidence does not support a simple return-to-office orthodoxy. A major randomised field experiment found that hybrid work improved job satisfaction and reduced quit rates by roughly one third without harming performance or promotion prospects (Bloom et al., 2024). Practitioner commentary argues that generative AI further strengthens the case for hybrid and remote work by improving information sharing, coordination and productivity, while also raising concerns about cybersecurity, privacy, legal accountability and job displacement (Tsipursky, 2023). Flexibility, therefore, remains structurally embedded in many professional sectors despite public discourse about a universal return to office (Owl Labs, 2024). Jones and Asonye (2023) also found that during the COVID years, remote workers began using AI-mediated communication tools for collaboration, production and even emotional support. Some remote employees even became psychologically dependent on AI tools and struggled with interaction skills in slower, face-to-face processes when returning onsite, suggesting a preference for AI-assisted work.

These developments raise a timely question: how do working arrangements relate to employees' relationships with AI as a collaborator? The spatial organisation of work is not merely a background condition. Working arrangements are linked to variations in interruptions, privacy, visibility, social support, psychological safety, informal interaction and the experience of belonging. These dimensions are central to employee well-being and collaboration, and they are likely to influence whether AI is approached primarily as a tool, a source of cognitive support, a substitute for unavailable colleagues, or even a quasi-social companion. Research on open-plan offices, remote work and workplace well-being already suggests that different settings produce distinct social climates that affect concentration, connectedness and mental health (Kim and de Dear, 2013; Bernstein and Turban, 2018; Wells et al., 2023; Lyzwinski, 2024; Ramantswana et al., 2024).

Existing evidence also suggests that hybrid work and AI adoption should not be analysed separately. Both transformations reconfigure the socio-material infrastructure of knowledge work: who is visible to whom, how communication is routed, where informal learning occurs, and how workers access advice, evaluation and recognition (Smite et al., 2022; De Amicis, Soga and Bolade-Ogunfodun, 2024). In this sense, AI adoption is embedded within the same organisational reconfiguration as hybrid work. The employee renegotiating office attendance may also be renegotiating the extent to which drafting, searching, summarising or feedback is delegated to AI

systems. Workplace configurations should not be examined merely as work contexts, but as socio-material conditions that may be associated with the social meaning and practical use of AI.

These observations provide a strong rationale for the present study. If working arrangements are linked to social relatedness, privacy, interruptions, and support, they may also be linked to differences in the meanings, motives, and frequency of AI use in everyday work. It is therefore reasonable to hypothesise that, in open-plan environments, employees may turn to AI to compensate for noise, distraction, and the difficulty of sustained concentration. In remote settings, AI may become a more salient cognitive and affective partner when colleagues are physically absent and interaction is mediated through platforms. In more traditional office settings, workers may rely more readily on proximate colleagues and use AI in a more instrumental, task-bounded way. The present study therefore examines how traditional closed offices, open-plan offices, and remote home-based work relate to attitudes towards AI, patterns of use, and the broader social-psychological conditions of knowledge-intensive work.

## Literature Review

The sociology of work treats workplace arrangements not as neutral containers but as socially organised environments that shape attention, interaction, norms and emotional experience. Physical layout and work location influence whether workers can regulate privacy, access support, withdraw from surveillance, sustain concentration, or experience recognition and belonging. These factors matter because collaboration and effectiveness are never purely individual achievements; they are mediated by social relations, expectations and shared meanings. In this sense, office design and work location can be understood as part of the sociomaterial infrastructure through which organisational life is enacted.

### *Theoretical Framing*

A useful starting point is socio-technical systems theory (STS), originally formulated by Trist and Bamforth (1951), which holds that work outcomes emerge from the joint organisation of social subsystems, such as norms, trust, and role expectations, and technical subsystems, such as platforms, devices, and spatial layouts. The core thesis of STS is that neither technology nor working arrangements alone produce desired outcomes if the social-psychological aspects of the organisation are not properly addressed or understood, and vice versa (Taylor, 1975; Trist, 1981; Trist et al., 2013). Applied to hybrid work, this perspective shifts the analytical focus away from the simple question of whether remote or office work is better, towards how communication technologies, workplace design, and organisational routines jointly produce new forms of coordination and dependency (Smite et al., 2022). This is particularly relevant for AI, because AI tools do not enter an empty social field: they are introduced into already-structured environments, including systems of authority, access, interaction, and evaluation.

Actor-network theory offers sharper insight by treating infrastructures not merely as supports for action but as participants in the assembly of organisational relations. De Amicis et al. (2024) argue that flexible working practices can surface hidden inequalities because the infrastructure itself helps distribute visibility, access to mentorship, and participation in informal networks. For this study, this means that workplace arrangements and AI systems should be conceptualised as co-constitutive elements of organisational life. They may structure what workers can do and how they are seen, supported, and connected.

### *Open-plan Workspace*

Open-plan offices have long been promoted as spaces that increase transparency, spontaneous interaction and collaboration. They have been highlighted as transformative, enabling rapid organisational change and flattening hierarchies in a world where work is no longer tied to a single desk but is instead dynamic, team-based, and knowledge-intensive (Mohezar et al. 2021; Sailer and Thomas 2021; James et al. 2021). However, the empirical record is notably ambivalent, suggesting that the switch from cellular offices to open-plan workspaces is largely driven by economic incentives, namely fitting more people into less space. Yet financial benefits appear to be outweighed by the intangible costs stemming from the negative effects of open-plan offices (James et al. 2021). One of the most-cited intervention studies on open workspaces found that when two organisations shifted to open-plan layouts, face-to-face interaction declined by about 70 per cent. At the same time, email and instant messaging increased, suggesting that heightened visibility may provoke withdrawal rather than sociability (Bernstein and Turban, 2018). This finding challenges the assumption that spatial proximity automatically produces social connectedness. Instead, workers appear to manage exposure by reducing unscripted interaction when they feel too visible or interruptible.

Research into the psychosocial effects of office design reinforces this tension. James et al. (2021) and Kim and de Dear (2013) found that occupants of open-plan offices reported lower satisfaction than those in private offices across several dimensions, particularly sound privacy. Weziak-Białowska et al. (2018) similarly linked open-plan environments to irritability and poorer job performance, while Mache et al. (2020) associated flexible work arrangements in open-plan spaces with occupational stress and impaired psychological detachment. Sailer and Thomas (2021) found that staff are less likely to view their workplace positively when they see more desks around them and when they face away from the room, with more space behind them than in front. In such spaces, sharing information, feeling part of the team, and working well together also suffer. Concentrated work and getting things done are further impaired. More recent qualitative research reports that open-plan offices can support teamwork, accessibility, and inclusivity while also compromising privacy, shortening attention spans, increasing stress, and lowering perceived productivity (Ramantswana et al., 2024). Open-plan settings may thus intensify ambient sociality while weakening the forms of secure, voluntary, and focused interaction that sustain both well-being and effective collaboration.

These features are directly relevant to AI use. In noisy, interruption-heavy environments, AI tools may be attractive as controllable supports for drafting, summarising, or brainstorming, allowing workers to create a temporary zone of cognitive insulation when sustained concentration is difficult. Yet the same tools can deepen dependence on mediated work and make AI use more publicly legible, thereby intensifying impression management. Open offices may therefore be associated with AI use through task conditions, visibility, legitimacy, and local norms.

### *Working Outside the Office*

Remote work is often associated with autonomy, flexibility and relief from commuting, but its psychosocial consequences are mixed. A systematic review by Wells et al. (2023) found that, across studies, remote working was linked to both improved well-being and adverse outcomes, such as technostress, exhaustion and loneliness, depending on work demands and available resources, consistent with the JD-R model. A 2024 scoping review likewise concluded that remote work can be experienced positively, but that isolation and loneliness remain recurrent risks, while managerial support, collegial contact and a functional home workspace act as important protective factors (Lyzwinski, 2024). In other words, remote work can increase autonomy without guaranteeing social integration.

To understand these effects sociologically, Granovetter's (1973) strength-of-weak-ties perspective and broader social-capital theory are particularly useful. Weak, bridging ties are important because they connect otherwise separate groups and circulate new information across organisational boundaries. In the context of hybrid and remote work, this lens suggests that collaboration may remain formal while becoming less generative within networks. Yang et al. (2022) provide the benchmark finding here: firm-wide remote work at Microsoft made the collaboration network more static and siloed, reduced bridging ties across groups, and shifted communication from synchronous to asynchronous forms. Wu et al. (2023) extend this argument by showing that misalignment in employees' perceived ease of use of communication tools predicts the dissolution of advice-seeking ties, especially when workers spend more time working remotely.

These findings matter because they suggest that the costs of remote work extend beyond individual loneliness; they also include the erosion of relational infrastructures through which information, recognition, and innovation circulate. This is especially important for hybrid work. Hybrid schedules may preserve many of the retention and satisfaction benefits identified by Bloom et al. (2024), yet their organisational value depends partly on whether office time actually reproduces bridging, mentoring, and ritual participation rather than merely reintroducing surveillance or commuting burdens. Finnish evidence reinforces this point. Alasoini's (2025) ethnographic study of software firms identifies a 'hybrid-era control deficit' arising from fewer face-to-face encounters, difficulties with online communication, and weakened participation in organisational rituals.

The social-psychological significance of remote and hybrid work lies in the restructuring of co-presence. When workers are physically separated, interaction becomes more scheduled, platform-mediated and textually documented. Collegial

support may feel less immediate, informal reassurance declines, and peripheral awareness weakens. Under these conditions, AI may become a more salient source of rapid feedback, cognitive offloading and conversational simulation. Research on generative AI in knowledge-intensive work suggests that workers value these systems for idea generation, drafting and personalised assistance, especially when local human support is scarce (Koponen, 2024). Tsipursky (2023) similarly argues that AI-enhanced tools can improve coordination, knowledge access and remote teamwork, while warning that their wider use may heighten cybersecurity and privacy risks if organisations do not govern them carefully.

### *Traditional, Closed Offices*

Traditional and closed offices receive less attention in current debates because they are often treated as the implicit baseline against which open-plan and remote models are compared, typically as attempts to improve them. Yet they remain analytically important as distinct social settings. Compared with open-plan layouts, private or cellular offices generally offer more privacy, fewer distractions, and greater control over exposure to others, which can support concentration and reduce stressors associated with interruptions (Kim and de Dear, 2013). Compared with home-based work, traditional offices offer greater direct access to colleagues, supervisors, and organisational routines, including informal help-seeking and unplanned interactions. However, they may also limit flexibility and individual control over where and when work is performed, especially when attendance requirements are rigid or commuting demands are substantial.

From a social-psychological perspective, the traditional office may therefore foster a distinct ecology of collaboration. Workers may experience stronger boundaries between work and non-work than at home, while also retaining more opportunities for immediate collegial consultation than remote workers. This does not necessarily make traditional offices superior in all respects; rather, it suggests that AI use may be reported as more instrumentally bounded there. If human support is physically available and interruptions are more manageable than in open-plan spaces, AI may be used more as a supplementary tool than as an alternative interaction partner.

### *Job Demands, Resources and Trust in AI*

The Job Demands-Resources (JD-R) model links structural conditions to experienced strain, motivation and performance. In this framework, well-being depends on the balance between job demands, such as workload, emotional pressure, interruptions and technostress, and job resources, such as autonomy, social support, feedback and meaning. Hybrid work is theoretically important because it often increases autonomy while introducing new demands, including digital isolation, blurred role boundaries and coordination overload (Stasiła-Sieradzka et al., 2023; Hopkins and Bardoel, 2023).

This framework can be productively extended to AI adoption. Marimon et al. (2024) propose that trust in generative AI mediates the relationships between AI adoption and work engagement and performance. This is highly relevant to the

present study, as trust is unlikely to develop independently of working arrangements. In an open-plan office, trust in AI may be shaped by pressure to avoid interruptions and by visibility to others; in remote work, by the relative absence of immediate collegial support; and in traditional offices, by the ongoing availability of human comparison points. A JD-R perspective, therefore, helps explain why the same AI system may be experienced as empowering, stressful, reassuring, or unnecessary, depending on the broader relational environment.

The literature on human-AI collaboration increasingly argues that AI should be understood not only as automation but as a participant in strategically distributed work systems. Reviews of human-AI collaboration emphasise that successful collaboration depends on the dynamic fit between human judgement and AI capabilities, including trust, task allocation, interpretability, and opportunities for mutual adaptation (Liu et al., 2024; Bankins et al., 2024). Fischer and Schellenbach (2026) show that users' willingness to trust AI systems depends not only on technical reliability but also on social cues and contextual evaluation factors. Organisational research similarly suggests that AI can alter not only how tasks are completed but also how people interact, share knowledge, and perceive one another's contributions (Büchsenschuss et al., 2026).

Recent productivity research reinforces the need for a socially differentiated view of AI. Generative AI often yields substantial average gains, but these gains are heterogeneous across tasks, sectors, and skill levels. Haase et al. (2026) found that ChatGPT is widely embedded in knowledge-intensive work, but mainly as a complementary collaborator rather than a replacement for human expertise. Across coaching, IT programming, and academic research, professionals valued ChatGPT most for structured, content-heavy tasks such as ideation, coding support, writing, synthesis, and information processing, while relational, interpretive, and authenticity-sensitive work remained strongly human-led. Brynjolfsson, Li, and Raymond (2023) found strong productivity improvements in customer support, especially among less experienced workers; Noy and Zhang (2023) reported faster, higher-quality writing among college-educated professionals; and Peng et al. (2023) showed major efficiency gains in programming tasks with GitHub Copilot. Sowa et al. (2021) found that human-AI collaboration, rather than full automation, increases productivity in managerial tasks.

Practitioner analysis reaches a similar conclusion: AI can free workers from repetitive tasks, improve coordination and support knowledge management, but it can also intensify concerns about privacy, surveillance, legal accountability and job displacement (Tsipursky, 2023). While AI adoption in organisations may enhance efficiency, it also presents challenges, including employee resistance, ethical concerns about data management, algorithmic bias, and fear of losing one's job and status to AI (Mirbabaie et al., 2022). To address these questions, organisational decision-makers should ensure that AI adoption aligns with organisational culture and values (Murire, 2024; Soulami et al., 2024). Other studies likewise indicate coordination trade-offs, uneven effects for experienced users, and shifting skill demands, including greater emphasis on higher-order cognitive skills and less emphasis on certain social skills (Song et al., 2024; Kreitmeir and Raschky, 2024; Gulati et al., 2025).

Working with generative AI improves immediate task performance, but when people switch back to solo work, they report lower intrinsic motivation and greater boredom, even though they feel more in control (Wu et al., 2025). Collaboration with

GenAI can also heighten feelings of disconnection from one's work, which in turn leads to corner-cutting behaviours and doing the bare minimum. Increased interaction with AI systems rather than people can also lead to feelings of isolation, increased fatigue resulting in insomnia, and even increased alcohol use (Tang et al., 2023).

Although the long-term impacts of increasing AI use are unclear, largely because the technology is only a couple of years old, it seems to be creeping into traditionally human endeavours. A study by Behnad and Hodjat (2025) found that AI-generated treatment plans in therapy supervision settings were statistically comparable to those created by human professionals across multiple therapeutic modalities, particularly for structured tasks such as diagnostic support, treatment formulation, goal setting, and intervention planning. The findings suggest that AI may increasingly extend into knowledge-intensive and human interaction-related professions by augmenting analytical and content-focused work rather than replacing human expertise entirely.

In fields such as counselling, therapy, and coaching, AI appears particularly promising as a support tool for supervision, reflection, training, and preparation, especially in contexts with limited access to human experts. However, authenticity, relational trust, ethical responsibility, and emotional attunement remain distinctly human dimensions that continue to require professional oversight and judgement (Behnad & Hodjat, 2025).

In sociological analyses of relationships, AI is not merely a tool but a multifaceted actor that redistributes dependence, expertise, status and collaborative burden. The most useful way to conceptualise AI in this context is neither as an autonomous actor nor as a neutral instrument, but as a socio-technical mediator whose meaning depends on situated use. Workers may relate to it instrumentally, strategically, defensively or affectively, depending on whether they seek efficiency, privacy, reassurance, creativity or compensation for missing support. This study argues that working arrangements may be associated with the relational context in which AI is encountered and made meaningful.

### *Research Gap*

Taken together, the literature points to a clear gap. Research on working arrangements shows that office layout and work location affect privacy, interruptions, belonging, stress, and collaboration patterns (Kim and de Dear, 2013; Bernstein and Turban, 2018; Wells et al., 2023; Lyzwinski, 2024; Ramantswana et al., 2024). Research on hybrid work shows that retention and satisfaction benefits can coexist with more static, siloed collaboration networks, especially when bridging ties and organisational rituals are not actively maintained (Bloom et al., 2024; Yang et al., 2022; Alasoini, 2025). Research on human-AI collaboration shows that AI adoption influences knowledge work, trust, organisational networks, and perceptions of agency, while also generating heterogeneous productivity gains and shifting skill demands (Koponen, 2024; Büchsenschuss et al., 2026; Liu et al., 2024; Brynjolfsson, Li and Raymond, 2023; Gulati et al., 2025). Yet this literature has rarely been brought into direct conversation. There remains limited empirical understanding of how the social and spatial organisation of work shapes the meanings and uses of AI in everyday knowledge-intensive work.

The present study addresses this gap by comparing traditional closed offices, open-plan offices, hybrid arrangements, and home-based remote work. It asks how patterns of AI use and employees' attitudes towards AI vary across these settings, with particular attention to social support, interruptions, privacy, psychological safety, and social connectedness. In doing so, the study contributes to organisational sociology by exploring how material arrangements shape socio-technical practices, and to social psychology by examining how workers' perceived relational environments condition their orientation towards AI as a collaborator.

## Methodology

The data analysed here come from a self-administered online questionnaire on AI use, workplace layout, and collegial relations among knowledge workers, hosted on the Webropol platform and distributed through professional and academic networks in the first half of 2026. Participation was voluntary and anonymous. The instrument combined demographic items, fixed-response items on workplace layout and working arrangements, 50 five-point Likert items covering AI use, collegial relations, and workplace climate, two ten-point sliders, and one open-ended question.

A total of 60 valid responses were obtained. The realised sample comprises a small, predominantly Northern European group of knowledge workers (Table 1).

**Table 1.** *Sample Composition (n = 60)*

| Characteristic       | Categories (n)                                                            |
|----------------------|---------------------------------------------------------------------------|
| Working arrangement  | Remote 23; Hybrid 20; Private office 10; Open-plan office 7               |
| Country              | Finland 38; Estonia 7; other European 14 (1–2 each); United States 1      |
| Gender               | Male 35; Female 22; Missing/Prefer not to say 3                           |
| Age group            | 45–54: 22; 35–44: 14; 25–34: 14; 55–64: 7; Under 25: 2; 65+: 1            |
| Education            | Master 26; Bachelor 21; Doctorate 7; Secondary 4; Other 2                 |
| Organisation size    | 1–10: 26; 251–1000: 18; 11–50: 9; 51–250: 7                               |
| Role                 | Employee 29; Freelancer/Entrepreneur 12; Manager 9; Team lead 6; Other 4  |
| Industry (top three) | Education/training/research 13; ICT/software/games 11; Design/Creative 11 |
| Working language     | Both/multilingual 34; Local language 19; English 7                        |
| Remote workdays/week | M = 3.00 (SD = 2.02); median 3                                            |

The sample skews towards Finnish respondents (63%), employees and freelancers in micro and small organisations, and a balanced age distribution between 25 and 54. Hybrid and Remote arrangements together account for 72% of respondents,

consistent with the post-pandemic distribution of knowledge work in Northern Europe (Eurofound, 2022). Open-plan workers ( $n = 7$ ) constitute the smallest group, a limitation discussed below.

The realised sample size places the present analysis at the exploratory end of the analytic spectrum (Tukey, 1977; Lakens, 2022). The findings reported in the following sections are intended to identify candidate patterns and directions of association rather than to support definitive inferential or causal claims. They will be tested confirmatorily in a planned second wave of the research (target  $n > 100$ ).

### *Methods*

The analysis examines whether AI adoption and attitudes towards AI vary across four workplace-layout settings: private offices, open-plan offices, hybrid arrangements, and remote home-based work. The analytical strategy is item-level cross-tabulation: each of the 18 AI-related survey items is tested independently against the four-category working-arrangement variable. No composite sum scores or scale aggregates were computed. This choice was deliberate. Given the study's exploratory character and small sample size ( $N = 60$ ), the analysis neither assumes nor attempts to confirm that items within a block measure a single latent construct. Instead, each item is treated as a self-standing indicator of a specific attitude or behaviour, and the blocks serve as organisational devices that make the pattern of results easier to read and interpret (de Vaus, 2014; Tukey, 1977).

### *Item grouping*

The 18 items were grouped a priori into five conceptual blocks based on theoretical content. The groupings were defined before any analysis and reflect the study's conceptual framework rather than a data-driven procedure such as factor or cluster analysis. The five blocks are as follows. *Adoption* comprises one item measuring the frequency of regular AI use in work tasks. *Purposes* comprises seven items covering the perceived effects of AI on task efficiency, creative quality, written communication, cognitive structuring, idea generation, routine task handling, and dependence on AI tools. *Framing* comprises four items capturing the metaphors through which respondents conceptualise their relationship with AI: as a task-support tool, an assistant for idea exploration, something that feels collaborative, and a constructive collaborator in knowledge-intensive work. *Self-efficacy and Autonomy* comprise two items measuring confidence in using AI effectively and the extent to which AI has enabled more independent work. *Organisational Context* comprises four items covering organisational provision of AI tools, individual freedom to decide whether and how to use them, workplace encouragement of AI experimentation, and organisational guidance on responsible use.

Post hoc internal consistency estimates were calculated to characterise inter-item coherence within each block. The Purposes block ( $\alpha = .844$ ) and the Framing block ( $\alpha = .819$ ) showed good internal consistency, suggesting that the items within these blocks tap a sufficiently unified dimension. By contrast, the Organisational Context block ( $\alpha = .570$ ) and the Self-efficacy and Autonomy block ( $\alpha = .446$ )

showed weaker coherence, reflecting theoretically related but empirically distinct aspects of each group's AI use: policy and access versus freedom of use in the former, and perceived capability versus behavioural independence in the latter. These results confirm that the blocks are best understood as theoretically motivated thematic groupings rather than psychometrically validated scales, and they are treated as such throughout the analysis.

### *Response Recoding*

Each five-point Likert item was collapsed into three ordered categories: Disagree (1–2), Neutral (3), and Agree (4–5). This recoding was applied to improve cell frequencies in the contingency tables, which, with 60 responses across four working-arrangement groups, would otherwise yield prohibitively sparse cells in a full five-category analysis. Collapsing ordered Likert-type responses is a common pragmatic strategy in small-sample exploratory survey analysis, although it necessarily reduces response-level detail and should be applied transparently (Jamieson, 2004; Sullivan and Artino, 2013; Koo and Yang, 2025; Liu et al., 2025).

### *Missing Values*

Responses outside the defined 1–5 Likert scale were treated as missing. In the raw survey export, a small number of later-item responses were coded as 0, even though 0 was not a questionnaire response option. These values were therefore not interpreted as disagreement, neutrality, or a substantive response category. Analyses were conducted using valid responses for each item, with item-specific valid *N* reported in the results tables.

### *Statistical Tests*

For each of the 18 AI-related items, a 3×4 contingency table (three recoded response categories by four working-arrangement categories) was analysed using Pearson's chi-square test of independence. The nominal degrees of freedom were 6. Pearson's chi-square statistic is a standard method for assessing association between categorical variables, and Cramér's *V* was calculated as a sample-size-adjusted measure of association magnitude (Agresti, 2018; Field, 2018; McHugh, 2013).

The conventional large-sample approximation for Pearson's chi-square test requires sufficiently large expected cell frequencies. This condition was not consistently met in the present data, as *N*=60 was distributed across four unequal working-arrangement groups, including an open-plan group of seven respondents. Across the 18 3×4 tables, expected cell frequencies below five were common. Therefore, the asymptotic chi-square probabilities should not be treated as the primary basis for inference in this study (Agresti, 1992, 2018; Field, 2018; McHugh, 2013). To address sparse expected frequencies, conditional Monte Carlo estimates of the exact probability were calculated from 100,000 random contingency tables generated under the null hypothesis of independence, while retaining the observed row and column margins. The estimated probability is the proportion of simulated

tables with a Pearson chi-square statistic at least as large as the observed statistic. This approach avoids reliance on the asymptotic chi-square approximation and provides a 99% confidence interval for simulation uncertainty around the estimated probability (Agresti, 1992, 2018; Mehta and Patel, 2025). Pearson chi-square statistics and their asymptotic probabilities are reported for comparability, whereas the Monte Carlo probabilities are treated as the primary inferential values.

This approach is preferable to relying solely on the large-sample chi-square approximation when contingency tables are sparse (Mehta and Patel, 2025). However, it does not address the substantive limitations associated with small subgroup sizes: the resulting estimates, including Cramér's  $V$ , remain sensitive to individual responses and are interpreted as exploratory rather than definitive. The use of Monte Carlo inference therefore improves the appropriateness of the probability calculation but does not increase the design's statistical power or generalisability.

Statistical significance was evaluated at the conventional unadjusted threshold of  $\alpha = .05$ . Given the study's exploratory purpose, the inferential results are used solely as a screening device to identify potential patterns rather than as definitive hypothesis tests. Effect-size magnitude, descriptive response distributions, theoretical coherence, and the study's design limitations are considered together when interpreting results. This approach aligns with the broader recommendation that empirical interpretation should not rest on a binary significant/non-significant distinction alone (Lakens, 2013; Wasserstein and Lazar, 2016).

Cramér's  $V$  was calculated as a sample-size-adjusted measure of association magnitude (Agresti, 2018; McHugh, 2013). Following conventional benchmarks for contingency-table associations, values of approximately .07, .21, and .35 were interpreted as small, medium, and large, respectively (Cohen, 1988; Kim, 2017). Accordingly, values from .331 to .347 are described as medium observed associations, whereas values from .370 to .509 are described as large observed associations. These benchmarks are used as interpretive guides rather than rigid substantive thresholds, particularly given the small and uneven group sizes in the present exploratory sample. Analyses were conducted in IBM SPSS Statistics version 32.0.

## **Results**

Six of the 18 AI-related items produced both asymptotic and Monte Carlo probabilities below .05. Because sparse expected frequencies were common and the conventional conditions for the asymptotic Pearson chi-square approximation were not consistently met, conditional Monte Carlo probabilities were treated as the primary inferential values: across the six items shown in Table 2, between 58% and 75% of expected cells were below five.

Based on the effect-size thresholds specified in the Methods, three associations had large observed effect sizes, and three had medium observed effect sizes. The six items represented four conceptual blocks: Adoption, Purposes, Framing, and Organisational Context (Table 2).

**Table 2.** *AI Items with Nominal Cross-arrangement Associations (df = 6)*

| Block       | Item (full questionnaire wording)                                        | N  | Chi-square <i>p</i> | Monte Carlo <i>p</i> | V    |
|-------------|--------------------------------------------------------------------------|----|---------------------|----------------------|------|
| Org context | <i>"My organisation provides or allows the use of AI tools."</i>         | 60 | <.001               | < .001               | .509 |
| Framing     | <i>"Interacting with AI can feel like a collaborative work process."</i> | 59 | .013                | .011                 | .370 |
| Org context | <i>"I am free to decide whether and how I use AI tools in my work."</i>  | 59 | .011                | .010                 | .375 |
| Purposes    | <i>"AI tools help me complete my work tasks more efficiently."</i>       | 60 | .041                | .036                 | .331 |
| Adoption    | <i>"I regularly use AI tools as part of my work tasks."</i>              | 60 | .025                | .023                 | .347 |
| Framing     | <i>"I sometimes use AI as an assistant to explore or develop ideas."</i> | 58 | .038                | .036                 | .339 |

The full cross-arrangement column percentages for the six items with nominal Monte Carlo associations are presented in Table 3.

**Table 3.** *Percentages of Agreement (Likert 4–5) by Working Arrangement for Six AI Items with the Strongest Cross-arrangement Associations*

| Item (abbreviated)                       | Private (N=10) | Open-plan (N=7) | Hybrid (N=20) | Remote (N=23) |
|------------------------------------------|----------------|-----------------|---------------|---------------|
| Regularly use AI tools at work           | 30%            | 43%             | 80%           | 70%           |
| AI helps complete tasks more efficiently | 50%            | 57%             | 90%           | 83%           |
| Interacting with AI feels collaborative  | 20%            | 57%             | 53%           | 57%           |
| Use AI as an assistant for ideas         | 40%            | 33%             | 74%           | 74%           |
| Organisation provides/allows AI tools    | 30%            | 71%             | 90%           | 91%           |
| Free to decide whether and how to use AI | 70%            | 57%             | 100%          | 86%           |

For comparison, the items showing no significant association include all six remaining purpose items ("AI tools enhance the creativity and quality of my work"; "I sometimes use AI tools to help structure or clarify my thinking"; "I mainly use AI tools for generating or refining ideas"; "I mainly use AI tools for repetitive or administrative tasks"; "AI tools have improved the clarity of my written communication at work"; "Losing access to AI tools would significantly impact my work"), both self-efficacy items ("I feel confident in my ability to use AI tools effectively"; "AI tools allow me to work more independently than before"), and the more instrumental tool-framing item ("I mainly view AI as a tool that supports my work tasks"), which is endorsed by 88% of respondents (52/59, as one respondent has a missing value on the item) and shows no statistically significant cross-arrangement association ( $V=.184$ , Monte Carlo  $p=.690$ ).

## Discussion

Four preliminary trends emerge from the pattern of nominal cross-arrangement associations and the null findings.

*Trend 1: Regular AI use and perceived task efficiency appear more common in hybrid and remote arrangements in this sample.* Agreement that AI tools were regularly used in work tasks was higher among respondents in hybrid (80%) and remote (70%) arrangements than among those in private (30%) and open-plan offices (43%). Perceived efficiency showed a similar descriptive pattern, with agreement reported by 90% of hybrid respondents, 83% of remote respondents, 57% of open-plan respondents, and 50% of private-office respondents. Both nominal associations had medium observed magnitudes:  $V=.347$  for regular AI use and  $V=.331$  for perceived task efficiency. The convergence of these two items is consistent with greater reported AI integration among hybrid and remote respondents in this sample. However, it does not establish that working away from a fixed office increases AI integration, as organisational AI provision, job role, industry, and worker selection may also account for the observed pattern.

From a JD-R perspective, this pattern aligns with the view that spatially flexible work is associated with both autonomy and coordination demands, particularly when AI becomes a salient resource for managing workload and information flow (Hopkins and Bardoel, 2023; Stasiła-Sieradzka et al., 2023).

*Trend 2: Instrumental AI framing appears widespread, whereas assistant-like and collaborative framings vary across working arrangements.* The instrumental framing ("I mainly view AI as a tool that supports my work tasks") serves as a near-ceiling baseline across all groups ( $V = .184$ , n.s., 88% agree overall). The collaborative-process framing ("Interacting with AI can feel like a collaborative work process",  $V = .370$ ) varies across arrangements: agreement is reported by 20% of private-office respondents, compared with 53% of hybrid, 57% of remote, and, interestingly, 57% of open-plan respondents. The 4/7 agreement rate in the open-plan subgroup is descriptively notable but highly uncertain given the small group size. It is tentatively compatible with research showing that open workspaces may reduce face-to-face interaction and increase reliance on mediated communication

(Bernstein and Turban, 2018), but this possible connection requires direct testing in a larger and better-balanced sample.

By contrast, AI used as an assistant for idea exploration ( $V = .339$ ) was most common among hybrid and remote respondents (74% each), compared with 33–40% in office-based settings. The absence of statistically significant cross-arrangement associations for specific use purposes suggests that the observed patterns may reflect relational framing and reported integration more than the task mix to which AI is applied. Given the sample size and exploratory design, this interpretation remains tentative. Office-based workers, particularly those in private offices, accept the tool framing but are less likely to endorse the partner framing. This descriptive pattern among hybrid and remote respondents is broadly consistent with recent evidence that human–AI 'teammate' roles emerge most strongly in digitally mediated, asynchronous, and content-heavy work settings (Siemon, 2022; Vaccaro et al., 2024; Haase et al., 2026).

*Trend 3: Organisational provision or permission to use AI appears to be the strongest observed cross-arrangement association.* The strongest association concerned organisational provision or permission to use AI tools ( $V=.509$ ): agreement was reported by 90% of hybrid and 91% of remote respondents, compared with 30% of private-office respondents. Reported freedom to decide whether and how to use AI also varied across arrangements ( $V=.375$ ): 100% of hybrid, 86% of remote, 70% of private-office, and 57% of open-plan respondents agreed. By contrast, confidence in using AI effectively did not show a statistically significant cross-arrangement association ( $V=.213$ , Monte Carlo  $p=.508$ ). These organisational patterns are consistent with evidence that remote- and hybrid-friendly organisations may also invest more heavily in digital infrastructure, including AI-enabled tools (Smite et al., 2022; Owl Labs, 2024). However, the present data cannot determine whether organisational infrastructure explains the observed associations.

These three trends are mutually consistent and point to a single preliminary interpretation: working arrangements and AI adoption co-vary primarily because spatially distributed work and organisational AI maturity tend to co-occur in this sample, not because remote work makes individual workers more AI-capable. Whether this reflects an organisational selection effect (AI-mature organisations adopt remote-friendly policies), a worker selection effect (digitally fluent workers self-select into Hybrid/Remote roles), or a confounding role-and-industry effect cannot be resolved with the present data and is an explicit objective of the planned phase 2 research.

A fourth, cross-cutting observation concerns the null findings. The absence of statistically significant cross-arrangement associations for specific use purposes and self-efficacy items suggests that the observed cross-arrangement patterns may be selective rather than pervasive. The tasks to which AI is applied appear to reflect the general demands of knowledge-intensive work rather than the conditions of any particular workspace: workers across all four arrangements draw on AI for the same functional repertoire, consistent with prior findings that generative AI is primarily used for idea generation, drafting, coding support and information processing across sectors, regardless of setting (Koponen, 2024; Haase et al., 2026). Similarly, confidence in using AI effectively does not vary by arrangement, providing no evidence in this

sample that AI self-efficacy varied systematically across the four working arrangements. The study cannot determine whether self-efficacy is primarily related to individual learning, prior digital experience, organisational context, or other factors. These null results help delimit the observed patterns, but they should not be interpreted as ruling out capability-based or task-mix-based explanations. The sample is too small to establish the absence of practically meaningful associations.

## **Conclusions and future implications**

This study examined how employees' relationships with AI in knowledge-intensive work vary across working arrangements. The cross-tabulation of eighteen AI-related items against the four-category working-arrangement variable yields a small but coherent set of findings. Instrumental framing of AI was widely endorsed in this sample, whereas reported regular use, selected collaborative framings, and organisational conditions varied across working arrangements. These patterns are exploratory, cross-sectional associations and cannot establish whether the work arrangement itself produces differences in AI use or whether organisational infrastructure, occupational composition, or worker selection account for the observed variation.

The six nominal cross-arrangement associations comprised three medium observed associations—regular AI use ( $V=.347$ ), perceived task efficiency ( $V=.331$ ), and AI use as an assistant for ideas ( $V=.339$ )—and three large observed associations—collaborative AI framing ( $V=.370$ ), autonomy over AI use ( $V=.375$ ), and organisational provision or permission to use AI tools ( $V=.509$ ).

Three preliminary patterns summarise the results. First, regular AI use was reported by 30% of private-office respondents, 43% of open-plan respondents, 80% of hybrid respondents, and 70% of remote respondents; perceived task efficiency followed a similar pattern. These medium-sized observed associations do not establish that greater remoteness increases AI adoption. Second, instrumental AI framing was widely endorsed across arrangements, while assistant-like and collaborative framings varied across groups. Third, the largest observed association was organisational: employer provision or permission to use AI tools varied strongly across working arrangements ( $V=.509$ ), and reported freedom to decide whether and how to use AI also varied ( $V=.375$ ). Confidence in using AI effectively did not show a statistically significant cross-arrangement association ( $V=.213$ , Monte Carlo  $p=.508$ ).

Taken together, these findings are consistent with (but do not demonstrate) an organisational-infrastructure interpretation of the observed variation in AI use. Theoretically, this pattern aligns better with a socio-technical and actor-network reading of the workplace than with a purely spatial one. In this sample, the clearest differentiating “actors” were not a particular physical feature of the workspace but rather reported organisational provision or permission to use AI tools and freedom over their use. This is consistent with De Amicis et al.'s (2024) argument that infrastructures actively distribute access and visibility rather than passively support work. It is also consistent with a JD-R reading in which autonomy operates as a job resource: hybrid and remote respondents in this sample more often reported freedom

to decide whether and how to use AI. This pattern is compatible with a JD-R interpretation in which autonomy may function as a resource supporting experimentation and integration of new tools, but that mechanism requires direct testing (Hopkins and Bardoeel, 2023; Stasiła-Sieradzka et al., 2023).

The findings also nuance two recurring claims in current debates. The first is the assumption, often made in defence of return-to-office mandates, that office presence is the natural infrastructure for innovation and adaptation. In this sample, private-office respondents reported lower regular AI use and less endorsement of selected assistant-like or collaborative framings than hybrid and remote respondents, while AI self-efficacy did not show a statistically significant association across arrangements. If hybrid arrangements are correlated with both retention benefits (Bloom et al., 2024) and AI maturity, these exploratory patterns do not establish that office presence impedes AI adoption and should not be used alone to evaluate return-to-office policies. They nevertheless indicate that future research on workplace policy should consider organisational AI provision, role composition, and digital-work infrastructure alongside physical attendance requirements. The second is the assumption that AI use erodes workplace social ties. Items measuring collegial relations, support, and culture were not associated with AI engagement in the present analysis, consistent with treating AI as a socio-technical participant in distributed work rather than a substitute for human collaboration (Liu et al., 2024; Büchsenschuss et al., 2026).

Growing evidence shows the detrimental impacts of increased human-AI collaboration on well-being and social connectedness (e.g., Tang et al., 2023; Shalu et al., 2025). Although the present study did not test whether remote work leads to heavier AI use or whether AI use affects well-being, the descriptive pattern warrants examination in future longitudinal research. If generative AI is increasingly adopted as a collaborator in hybrid and remote work, how do we ensure these circumstances don't exacerbate societal problems in the long run? Humans are hyper-social beings who need belonging, reflect on themselves, and build their identities in relation to other *people* (Van Bavel and Packer, 2021). Even if AI could fulfil the functional role of a colleague or even a team of coworkers, it remains merely a digital imitation of human interaction.

### *Limitations*

At least two limitations must be considered when interpreting these results. First, the small and uneven working-arrangement groups limited statistical power and produced sparse contingency tables. The open-plan group contained only seven respondents; consequently, a single response changes its within-group percentage by approximately 14 percentage points. In the focal 3×4 tables, many expected cell frequencies were below five. Conditional Monte Carlo inference was therefore used to avoid relying on the asymptotic chi-square approximation. However, this procedure does not eliminate the uncertainty arising from small subgroup sizes, stabilise Cramér's V estimates, or transform the findings into generalisable estimates. The reported associations should therefore be treated as preliminary and exploratory.

Second, the country composition (63% Finland) and over-representation of micro-organisation workers and freelancers limit external generalisability. The

patterns reported here are provisional initial directions; their robustness will become testable as the second wave of data collection moves the sample beyond the  $n > 100$  threshold and balances the layout, country, and organisation-size cells.

Other caveats also apply to the research at hand. The co-occurrence of layout and organisation cannot be disentangled using cross-sectional data of this size. Whether the pattern of increased AI use reflects organisational selection (AI-mature employers adopt remote-friendly policies), worker selection (digitally fluent workers self-select into hybrid and remote roles), or a confounded role-and-industry effect is precisely the question the planned Phase 2 will address. With a target of  $n > 100$  and balanced cells across layout, country, and organisation type, regression-based modelling with covariate adjustment will allow the relative contributions of working arrangements and organisational AI provisioning to be estimated separately.

Yet two implications follow for practice and policy. For organisations, the exploratory findings raise questions about whether employees across working arrangements have equitable access to approved AI tools, appropriate discretion to use them, and clear guidance on responsible practice. The present data do not establish that working arrangement causes differences in AI access or use, but they indicate that organisational provision and autonomy should be considered alongside physical work location in future research and organisational AI-governance discussions. Future studies should examine whether organisational AI provision functions primarily as a productivity resource, a coordination resource, or a marker of broader digital maturity.

Finally, the findings, even though initial and exploratory, highlight a potential risk. Although the benefits of increased productivity and autonomy are present in both remote work and collaborative AI use, the risks identified in previous studies run parallel to one another. Organisations may wish to monitor whether intensive AI use, remote work, and reduced collegial contact co-occur with loneliness, alienation, or other well-being risks. In the worst-case scenario, the negative effects may stack on this cohort of the knowledge-intensive workforce. The present study cannot establish these effects, but it identifies a rationale for future longitudinal and mixed-methods research on how such conditions may interact among knowledge workers.

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