ISSUE 01 · AI AND AUTOMATION FOR ONE-PERSON BUSINESSES

Does AI actually make a one-person business more productive?

What ten studies and surveys show, where they disagree, and how strong the evidence really is.

Published 16 November 2026 **Sources** 10, all linked **Claims checked** 37

Method prompts 1, 3, 4, 6, 7 of our 10-prompt pack

Truth labels

VERIFIED the source states it directly

ESTIMATED the source's own estimate, projection or survey self-report

HYPOTHESISED our inference from the cited sources; test it

THE BOTTOM LINE

1. In controlled tests on well-defined tasks, people using AI tools were clearly faster: from 14% more support issues resolved per hour to 55.8% faster on a set coding task. S1 S4 VERIFIED
2. The gains shrink or reverse on complex work outside the tool's strengths, and for experts working on projects they already know well. S3 S5 VERIFIED
3. So far, economy-wide data show small time savings and no measurable change in earnings. No study in this set measures one-person businesses directly, so anything said about sole traders is an inference. S6 S7 S9 HYPOTHESISED

WHAT THE SOURCES SAY

Findings by theme

Big, repeatable gains on bounded tasks

VERIFIED	At a firm with 5,179 customer support agents, access to an AI assistant raised issues resolved per hour by 14% on average and by 34% for novice and low-skilled workers, with minimal impact on the most experienced and skilled. S1
VERIFIED	In a preregistered experiment with 453 college-educated professionals doing writing tasks from their own occupations, ChatGPT cut average time taken by 40% and raised output quality by 18%. S2
VERIFIED	In a preregistered experiment with 758 Boston Consulting Group knowledge workers, those using GPT-4 on tasks inside the AI's capabilities completed 12.2% more tasks, 25.1% more quickly, with significantly higher quality. S3
VERIFIED	Developers given GitHub Copilot finished a set task, writing an HTTP server in JavaScript, 55.8% faster than a control group. S4

A jagged frontier: the gains are uneven and can reverse

VERIFIED	On a complex task picked to sit outside the AI's capabilities, consultants using AI were 19% less likely to produce a correct solution than those without it. S3
VERIFIED	In a randomised trial, 16 experienced open-source developers completed 246 tasks in mature projects they knew well. Allowing early-2025 AI tools increased completion time by 19%, though the developers believed afterwards that AI had cut their time by 20%. S5
HYPOTHESISED	Read together, these studies suggest AI helps most when the task is well-defined and the person is less experienced at it, and least when the person is already expert in that context. Self-reported speed-ups can be wrong in either direction. S1 S3 S5

Economy-wide effects are still small

VERIFIED	Linking adoption surveys to Danish administrative records, researchers estimated precise null effects on earnings and recorded hours, ruling out effects larger than 2% two years after ChatGPT launched. S6
ESTIMATED	In nationally representative US surveys, between 1 and 5 percent of all work hours were assisted by generative AI, and respondents reported time savings equal to 1.4 percent of total work hours. S7

ESTIMATED

The OECD puts measured time savings at between 2.8% and 5.4% of work hours among users, partly because people use AI for only part of their working time. S9

Small firms: least likely to use it, most likely to say it helps

ESTIMATED

In the OECD's late-2024 survey of SMEs, one-person companies were the least likely to use generative AI: 23.6%, against 45.8% for the largest SMEs. S9

ESTIMATED

Among SMEs using it, only 29% used generative AI in their core activities. 65% said it improved performance, but only 26% said it increased revenue. One-person companies were the most likely to report each benefit. S9

ESTIMATED

In UK businesses with 10 or more employees, self-reported AI use rose from around 12% to around 35% since late 2023: 58% in information and communication, 13% in construction. These figures leave out the smallest firms. S10

VERIFIED

AI agents doing whole jobs on their own are less proven. On a benchmark simulating a small software company, the best agent tested completed 30% of tasks autonomously. S8

WHERE THEY DISAGREE

Debates and contradictions

Does AI make experienced people faster?

ONE VIEW

Yes, broadly: knowledge workers and developers in controlled tests were faster with AI. S3 S4 VERIFIED

THE OTHER VIEW

Not always: the most experienced support agents saw minimal impact, and experienced developers on their own codebases were slower. S1 S5 VERIFIED

WHY THEY DIFFER

The studies differ in task and setting. The faster results come from set tasks chosen for the experiment; the slowdown comes from real issues in large, familiar projects with high quality standards. Experience level and how output is measured differ too. S4 S5 HYPOTHESISED

Big lab gains, tiny economy-wide effects: which is right?

ONE VIEW

Experiments show large task-level gains, such as 40% less time on writing tasks. S2 VERIFIED

THE OTHER VIEW

Population data show small time savings and null effects on earnings and hours. S6 S7 VERIFIED

WHY THEY DIFFER

Both can be true. Users apply AI to a small share of their time (5 to 6% of working time on days they use it, in the Danish survey), so a large gain on a few tasks becomes a small gain across the week. S9 ESTIMATED

How many small firms really use AI?

ONE VIEW

The OECD survey finds generative AI in use in 30.7% of SMEs. S9 ESTIMATED

THE OTHER VIEW

National statistics offices report lower rates for SMEs. S9 ESTIMATED

WHY THEY DIFFER

The OECD lists four reasons: a broader definition of generative AI, counting individual workers' use, later fieldwork, and voluntary participation that may attract tech-forward firms. S9 VERIFIED

HOW MUCH TO TRUST IT

Quality of the evidence

CLAIM	EVIDENCE	WHY
AI speeds up well-defined single tasks	STRONG	Several randomised or preregistered experiments agree, plus a large field rollout. S1 S2 S3 S4 VERIFIED
AI speeds up experts on their own complex work	INCONCLUSIVE	Results point in opposite directions depending on task and setting. S3 S5 HYPOTHESISED

CLAIM	EVIDENCE	WHY
AI raises a one-person business's income	WEAK	No study here measures solo owners' income. Survey benefits are self-reported, and population data show null earnings effects so far. S6 S9 HYPOTHESISED
AI agents can run business tasks end to end	WEAK	Evidence is one benchmark in a simulated company, where the best agent completed 30% of tasks. S8 VERIFIED

WHAT NOBODY HAS MEASURED YET

Research gaps

POPULATION GAP

No randomised study in this set measures sole traders or one-person firms. The closest evidence is survey self-report. S9 HYPOTHESISED

Open question (ours): Does a structured AI workflow change hours worked or invoices issued for UK sole traders over six weeks?

GEOGRAPHICAL GAP

UK official estimates cover businesses with 10 or more employees, so the smallest firms are not in the headline series. S10 VERIFIED

Open question (ours): What share of UK firms with fewer than 10 employees use AI, and for which tasks?

PRACTICAL GAP

Agent evidence is a benchmark in a simulated company, not live small businesses. S8 VERIFIED

Open question (ours): How often do AI agents complete routine admin tasks correctly in a live micro-business, and what do the errors cost?

METHODOLOGICAL GAP

Self-reported speed-ups can diverge from measured time: developers believed they were 20% faster when they were 19% slower. S5 VERIFIED

Open question (ours): How accurate are small-business owners' own estimates of AI time savings compared with logged time?

IF YOU RUN A SMALL BUSINESS

What this means in practice

1. Start with bounded, repeatable tasks, the ones where controlled studies show the clearest gains, and keep your own judgement on complex, high-stakes calls. S2 S3 HYPOTHESISED

2 Measure, don't guess: time a few tasks with and without AI for two weeks, because felt speed and real speed can differ. S5 HYPOTHESISED

3 Don't expect it to show up in revenue quickly: in the OECD survey, far fewer SMEs reported higher revenue than reported better performance. S9 ESTIMATED

Where the sources are thin. Thin spots: no source here studies one-person businesses directly, the agent evidence is a single benchmark, and most experiments last hours or days rather than months. Treat the practical points above as hypotheses to test, not findings.

HOW THIS BRIEF WAS MADE

We fetched 10 public sources on 16 November 2026 and saved their text. We then ran these prompts from our source-grounded prompt pack: 1. Structured literature review; 3. Debates and contradictions; 4. Research gaps; 6. Synthesis by theme; 7. Quality of the evidence. Answers use only those sources.

Before publishing, an automated check confirmed that each of the 58 claims cites a source and carries a truth label, that all 106 supporting quotes appear word for word in the saved source text, that every number in a claim appears in its quotes (or is a worked calculation that we recompute), and that every source link resolves.

SOURCES

Sources

S1 **Brynjolfsson, Li & Raymond (2023)**. Generative AI at Work. NBER Working Paper 31161. Field study (staggered rollout). https://www.nber.org/papers/w31161. Accessed 16 Nov 2026.

S2 **Noy & Zhang (2023)**. Experimental evidence on the productivity effects of generative artificial intelligence. Science 381(6654). Preregistered online experiment. https://doi.org/10.1126/science.adh2586. Accessed 16 Nov 2026.

S3 **Dell'Acqua et al. (2023)**. Navigating the Jagged Technological Frontier: Field Experimental Evidence of the Effects of Artificial Intelligence on Knowledge Worker Productivity and Quality. Harvard Business School Working Paper 24-013. Preregistered field experiment. https://www.hbs.edu/faculty/Pages/item.aspx?num=64700. Accessed 16 Nov 2026.

S4 **Peng et al. (2023)**. The Impact of AI on Developer Productivity: Evidence from GitHub Copilot. arXiv 2302.06590. Controlled experiment. https://arxiv.org/abs/2302.06590. Accessed 16 Nov 2026.

S5 **Becker et al. (2025)**. Measuring the Impact of Early-2025 AI on Experienced Open-Source Developer Productivity. arXiv 2507.09089. Randomised controlled trial. https://arxiv.org/abs/2507.09089. Accessed 16 Nov 2026.

S6 **Humlum & Vestergaard (2025)**. Still Waters, Rapid Currents: Early Labor Market Transformation under Generative AI. NBER Working Paper 33777. Surveys linked to administrative records (difference-in-differences). https://www.nber.org/papers/w33777. Accessed 16 Nov 2026.

S7 **Bick, Blandin & Deming (2024)**. The Rapid Adoption of Generative AI. NBER Working Paper 32966. Nationally representative surveys. https://www.nber.org/papers/w32966. Accessed 16 Nov 2026.

S8 **Xu et al. (2024, rev. 2025)**. TheAgentCompany: Benchmarking LLM Agents on Consequential Real World Tasks. arXiv 2412.14161. Benchmark in a simulated company. https://arxiv.org/abs/2412.14161. Accessed 16 Nov 2026.

S9 **OECD (2025)**. Generative AI and the SME Workforce, chapter 2: How are SMEs using generative AI?. OECD Publishing. Stratified telephone survey of smes. https://www.oecd.org/en/publications/generative-ai-and-the-sme-workforce_2d08b99d-en/full-report/component-4.html. Accessed 16 Nov 2026.

S10 **ONS (2026)**. Artificial intelligence in UK businesses: 2023 to 2026. ONS. Official statistics (business insights and conditions survey). https://www.ons.gov.uk/businessindustryandtrade/business/businessservices/articles/artificialintelligenceinukbusinesses/2023to2026. Accessed 16 Nov 2026.

Not financial, legal or tax advice. Quarrybrief summarises published sources for general information. It is not a substitute for advice on your own situation from a qualified professional, and official guidance can change after a brief is published: check the linked source before you act.

Operated by a UK sole trader trading as Quarrybrief. localreply+quarrybrief@agentmail.to. Postal address available on written request. https://quarrybrief.pages.dev/