MASTERCARD STRIVE EU REPORT

The digital transformation of European micro-businesses

Snapshot Study

strive | Caribou

About the Snapshot study

Micro-businesses are the backbone of the European Union's economy. Supporting them to navigate the transition to a lower-carbon, more digital economy across the EU is essential to delivering growth that is both sustainable and inclusive.

This Snapshot study captures the current state of the digital and sustainability journey for EU micro-businesses. Based on rapid data collection with more than 1,300 EU micro-businesses across 23 countries, it explores how they are progressing in these journeys and identifies the barriers and support needs to accelerate them. It also explores two emerging priorities of digital solutions: artificial intelligence and cybersecurity.

This study contributes to **closing the existing data gap** for EU micro-businesses (up to 10 employees) by:

1. Exploring the **progress** and **patterns** in micro-business digital and sustainability transition in the EU;
2. Identifying **barriers** and **support needs** to encourage and accelerate the journey; and,
3. Elicit the **return on investment** and **value** of digital and sustainability solutions.

This study is a once-off rapid data collection that complements existing, representative EU SME surveys such as the EU Digital Intensity Index and the OECD's D4SME study. Micro-businesses seeking to assess their own digital maturity in greater depth can use the Open Digital Maturity Assessment, a self-assessment tool developed by European Digital Innovation Hubs that measures additional dimensions of digital readiness.

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Key takeaways

- **Growth-oriented micro-businesses represent the greatest digital transformation opportunity.** While 27% of EU micro-businesses are "digital leaders," the 46% identified as "digital growers" show the highest potential for advancement. They value digitalization and demonstrate strong commitment to future investment, with 80% planning to increase digital investment—more so than leaders (72%).

- **Cybersecurity gaps create critical vulnerability, especially for digital growers.** Despite 54% of EU micro-businesses experiencing cyber incidents in the past two years, 42% use no cybersecurity solutions and only 19% plan to adopt them. Digital growers face the greatest exposure: they report more severe incidents than leaders yet have the lowest adoption rate (27%) due to capacity constraints rather than cost concerns.

- **AI use remains concentrated among digital leaders, though mostly at basic levels.** Nearly two-thirds of EU micro-businesses don't use AI today, and among the 41% who do, most rely only on basic tools, like ChatGPT. Even digital leaders struggle to advance beyond using basic solutions, with half (49%) using only general-purpose tools, indicating that targeted support for advanced AI adoption is needed.

- **The sustainability journey mirrors the digital journey, with strong intent but limited current use**. Despite 70% of EU micro-businesses planning to invest in sustainability solutions within 12 months, over one-third currently use only one solution or none. Gender-diverse leadership teams are 4x more likely to be sustainability leaders.

- **The digital-sustainability nexus is strongest among growth-oriented businesses.** Micro-businesses actively developing their digital capabilities are 20% more likely to be advancing on sustainability (or vice versa). This suggests that a commitment to growth is a key trait across these businesses. Their "growth mindset" enables them to tackle both transitions.

- **Policymakers should target digital and sustainability growers with bundled support to maximize impact.** Growers represent nearly half of EU micro-businesses and show the highest transformation potential, but face capacity barriers that risk stalling progress. Policy programs and support should bundle digital and sustainability interventions (aligning with how growers already behave), provide sector-specific implementation guidance and peer-learning networks, and lead with accessible cybersecurity solutions to enable broader adoption. Investing in growers today builds the foundation for advanced technology use tomorrow.

01

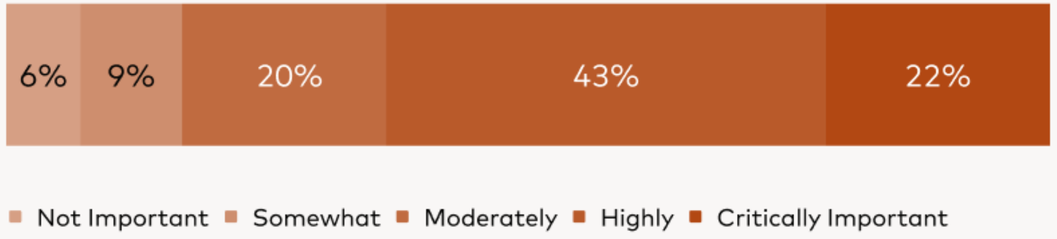
Where are micro-businesses on their digital journey?

Digitalization is a competitive priority for EU micro-businesses

Digitalization is a competitive advantage for EU micro-businesses, and they are committed to increasing investment in digital.

Two of every three EU micro-businesses rate digitalization as highly to critically important to their competitiveness.

Importance of digitalization to business competitiveness



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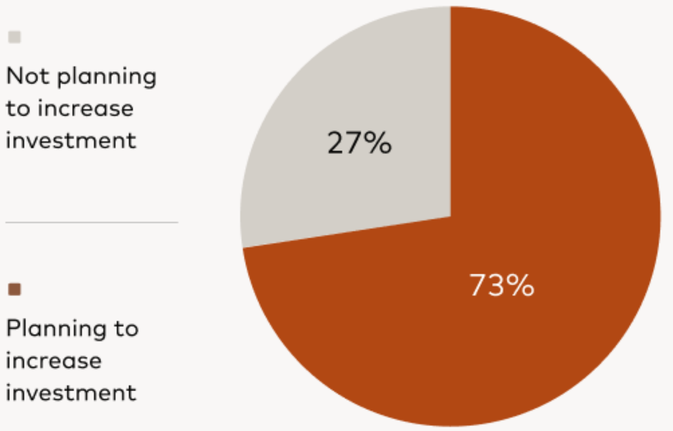
Nearly three-quarters plan to increase digital investment in the next three years.

Digital investment plans (next 3 years)



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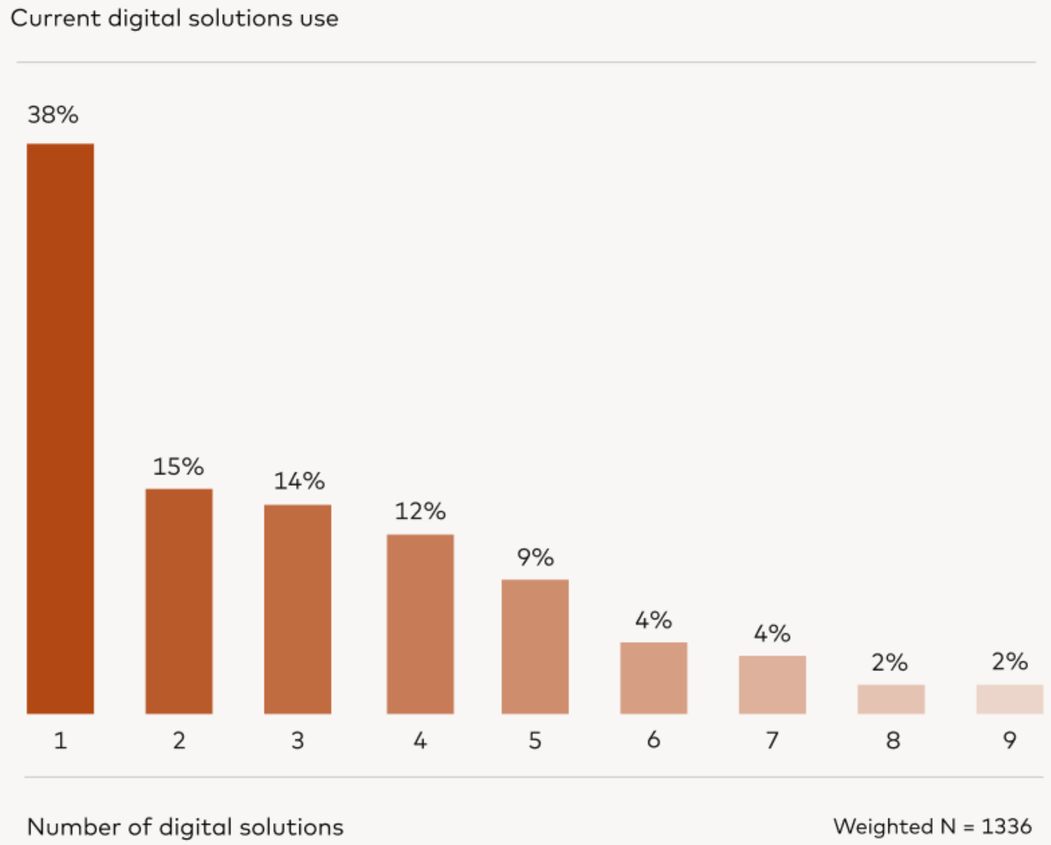
However, current digital use rates vary significantly

Prioritization hasn't yet translated into broader use. Although micro-businesses currently use three digital solutions on average, a small group of heavy users are skewing the average. In reality, 38% of micro-businesses rely on a single solution, suggesting that a substantial segment of micro-businesses are at the early stages of their digital journey.

The most common digital solutions used are cloud storage (45%), cybersecurity solutions (42%), digital payments (40%), and financial management apps (39%).

Micro-businesses average 3 digital solutions, but use is uneven: nearly 4 in 10 businesses use just one solution.



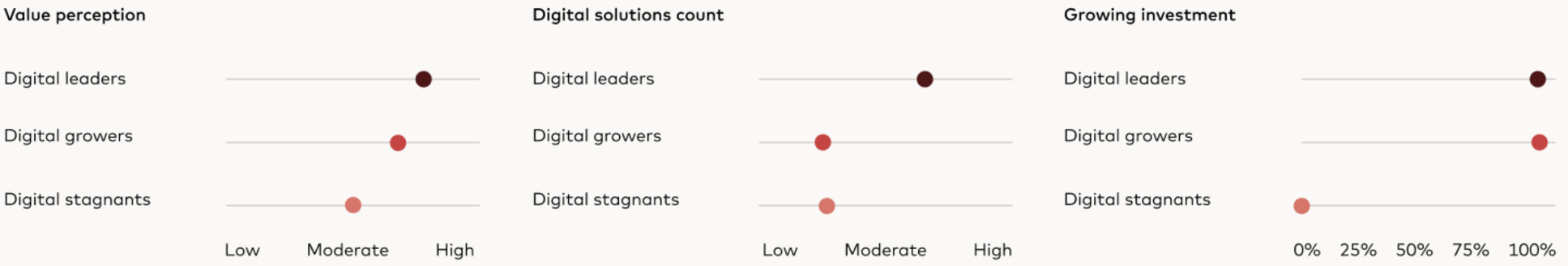
Digital profiles of micro-businesses

Understanding the differences between micro-businesses on their digital journey

To better understand the profiles, barriers, and needs of EU micro-businesses, we applied a behavioral lens to digital solution use, focusing on three dimensions: attitude toward digitalization, current solution use, and investment intention. These are the foundations of digital profiles that describe the digital "affinity" or maturity of EU micro-businesses in our study.

This analysis revealed that there are two clusters of micro-businesses that either lead or lag across all three dimensions. However, the key difference between businesses that stagnate and those that show signs of growth is their attitude towards digitalization, and **intention to invest** long term.

Digital personas defined by three core dimensions



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EU micro-businesses cluster into three digital profiles

What emerges are three distinct EU micro-business profiles: digital leaders, digital growers, and digital stagnants.

These profiles enable stakeholders to better understand their unique challenges and support needs. Digital growers show **the highest transformation potential**—not because of where they are, but where they're going. Their intention to invest (80%, compared to 72% of digital leaders) demonstrates that forward momentum matters more than current maturity.

Digital profile breakdown

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Digital stagnants

- Digitalization less valued
- Using 2 digital solutions, on average
- No plan to increase digital investment

Digital growers

- Digitalization moderately valued
- Using 1.8 digital solutions, on average
- 80% plan to increase digital investment

Digital leaders

- Digitalization highly valued
- Using 5.7 digital solutions, on average
- 72% plan to increase digital investment

Selling online and having a team are the strongest predictors of digital advancement

Using regression analysis and structural equation modeling, while controlling for covariates, we examined whether certain business factors influenced how micro-businesses progress on their digital journey. While no single factor guarantees that a business will become a digital leader, some attributes make businesses more likely to value digital tools and advance further along their digital journey.

Sales channel:

Micro-businesses serving customers online only are 6x more likely to be digital leaders, compared with those that are completely offline. Businesses selling both online and offline show the strongest effect, adopting 32% more digital solutions. Selling online creates an operational necessity that pulls the entire business forward in their digital journey.

Firm size:

Businesses with 2 to 10 employees are nearly 2x more likely to be digital leaders compared to solo entrepreneurs. They score higher on all digital profile elements. Larger teams create capacity for digital transformation, while solo entrepreneurs face bandwidth constraints.

All findings significant at p<0.05 or better after controlling for other business characteristics.

Gender-diverse leadership and younger businesses are more likely to advance

Firm age:

Younger businesses (established for less than 7 years) are 1.7x more likely to be planning digital investments compared with older counterparts. They rate digitalization higher in importance (+0.36 points) and adopt more tools (+0.55 points). Younger businesses are often digital-first, integrating digital from inception rather than retrofitting operations.

Leadership gender diversity:

Businesses with mixed-gender leadership teams are 84% more likely to be digital leaders compared to those with single-gender leadership, even when accounting for team size. Gender-diverse teams bring varied experience and perspectives to the digital transformation process, which often helps accelerate it.

All findings significant at p<0.05 or better after controlling for other business characteristics.

Context shapes micro-business support needs across regions and sectors

Sector:

The sector in which businesses operate shows no direct correlation to overall digital journey advancement, but reveals important patterns for support needs:

- Industry-focused businesses have adopted the most digital solutions, suggesting operational maturity.
- Manufacturing-focused businesses show the highest investment intent, indicating they're accelerating the fastest even if not currently most advanced.
- Services-focused businesses, despite valuing digitalization most highly, show no elevated solution adoption—they're stuck between awareness and implementation.

Region:

Micro-businesses in Southern Europe are 2x as likely to be digital growers or digital leaders than businesses in Western Europe. These businesses are 10% more likely to plan digital investment. This strong forward momentum is reflected in the region's younger firm age profile and strong competitive pressures, making digital a necessity, not a choice.

All findings significant at p<0.05 or better after controlling for other business characteristics.

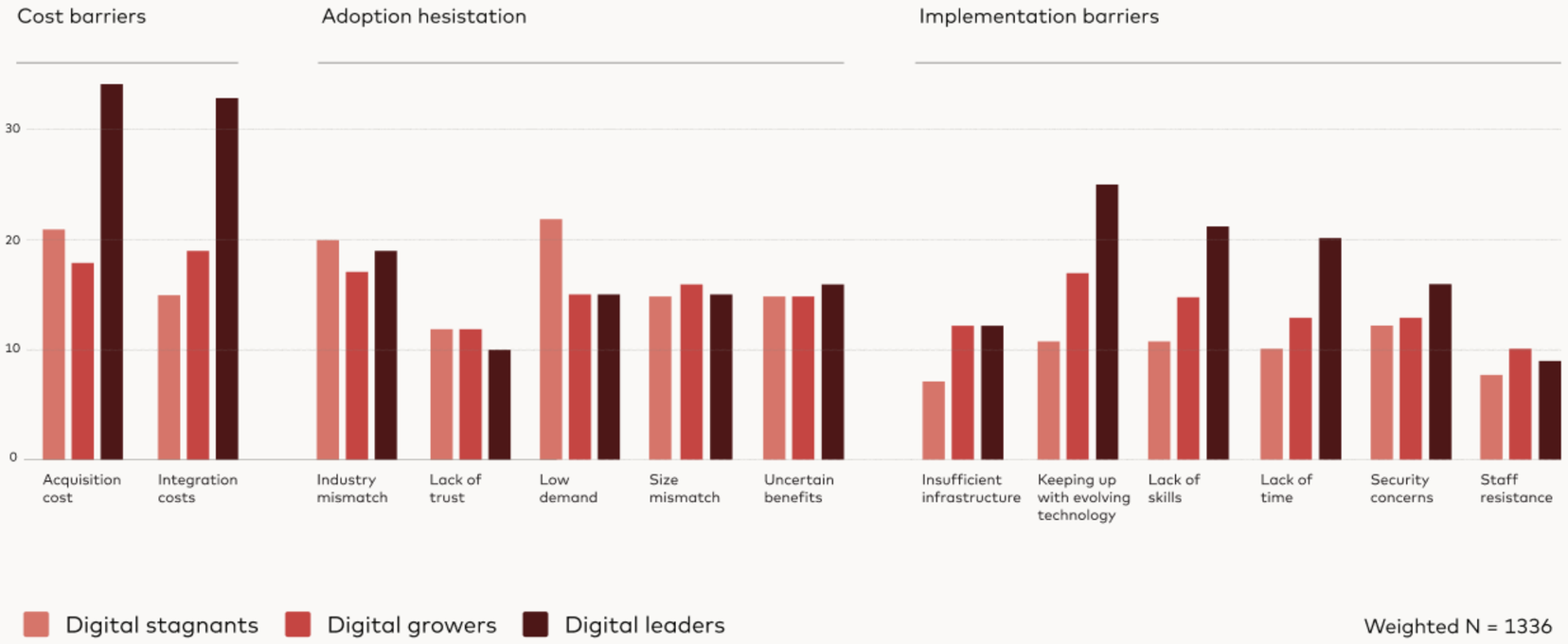
Cost is a universal barrier, but others differ by digital profile

While micro-businesses face different barriers based on where they are in the digital journey, cost barriers are universally a challenge. Understanding where businesses are in their digital journey is important for designing effective support. Digital leaders are most likely to report cost barriers, suggesting greater awareness of true costs. Stagnants are most likely to report hesitance around acquisition costs, and growers around ongoing integration costs.

Digital leaders and growers report similar barriers to different degrees. They are most concerned with practical implementation challenges, such as cost and keeping up with evolving technology.

Digital stagnants, on the other hand, report barriers around adoption hesitation. They're unsure whether digital solutions fit their business, whether they are worth the costs, and whether there's enough customer demand to justify the investment.

Barriers to digital use by type and profile

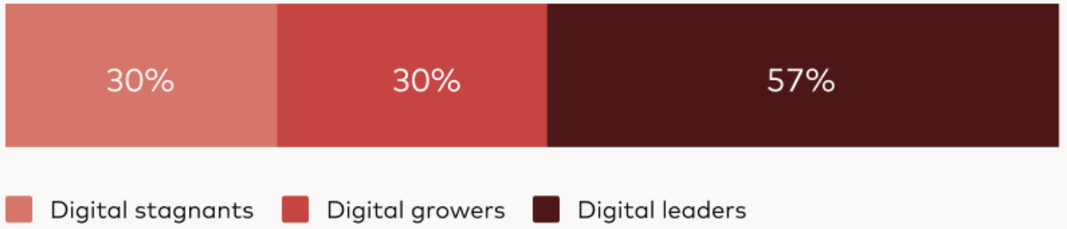


Targeted support requires understanding how cost barriers vary by profile, sector, and age

Sector:

More than half of digital leaders in the construction and manufacturing sectors (57%) report financial barriers to digitalization as a primary concern. However, this drops to one in three for digital growers and stagnants. Less digitally mature businesses are not yet aware of the full costs of digital transformation. They're unconvinced digitalization fits their business.

% of constuction and manufacturing businesses reporting financila barriers as a primary concern



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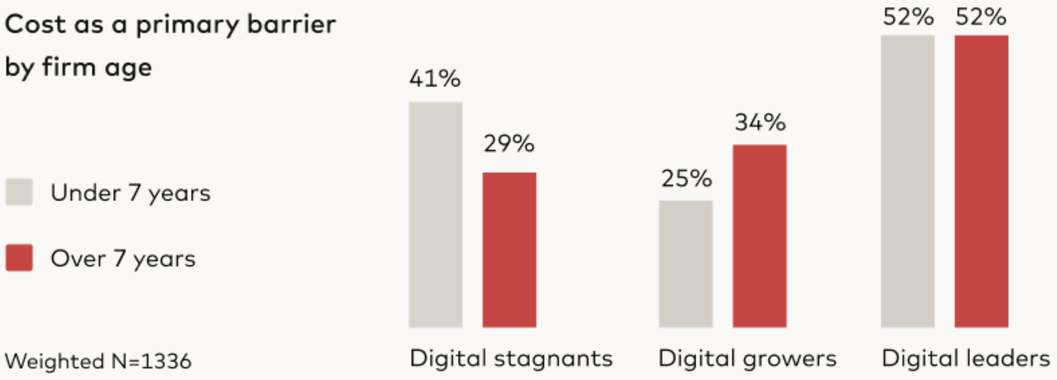
Firm age:

Among digital stagnants, younger businesses struggle more with costs (41% more likely to cite it as a primary barrier). Among digital growers, however, this pattern flips, and younger businesses are 26% less likely to cite cost as a barrier. Younger businesses that haven't yet committed to digital are cost-blocked; those that have, already built digital into their costs from the start.

Cost as a primary barrier by firm age



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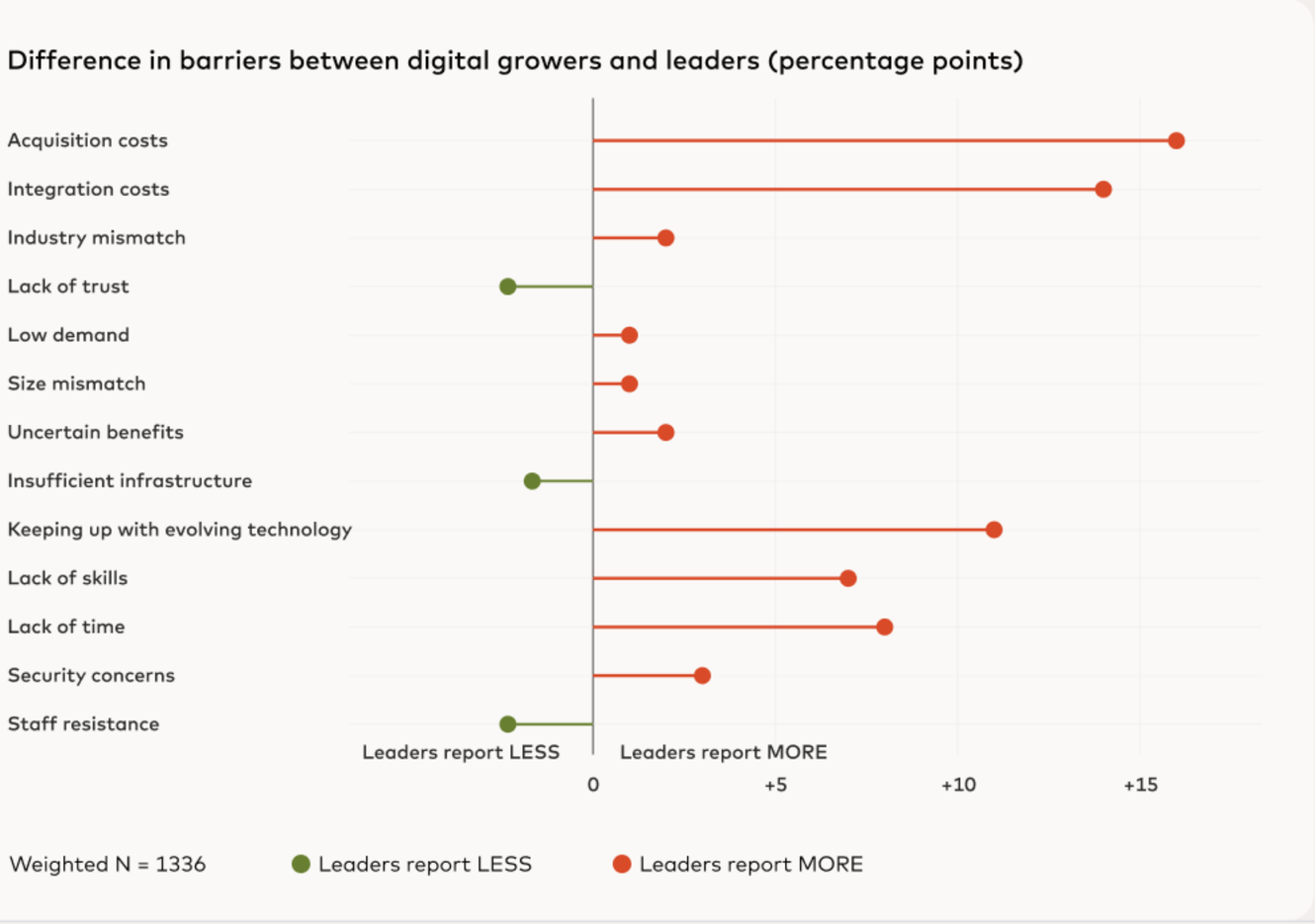
As digital growers advance, new barriers emerge

Digital leaders are significantly more likely than digital growers to report either acquisition or integration costs as significant barriers (+14–15 pp).

Similarly, they are also more likely to report barriers relating to implementation capacity (lack of skills or time) and keeping up with evolving solutions. These are pinch points digital growers will feel first as they advance on their journey.

Notably, digital leaders and growers similarly report barriers related to adoption hesitation (uncertain benefits, size or industry mismatch, low demand). They have already resolved the question of relevance, and their challenges lie in execution.

This illustrates the support pathways needed for growers as they transition to leaders. Without targeted support which addresses practical capacity gaps and costs, this transition risks stalling.



Digital stagnants are at risk of being left behind

75%

The majority of **digital stagnants** (75%) are in danger of **being left behind** in the digital journey.

Why? They have no intention to invest in digital in the next 3 years and they have limited digital solution use. Further, **92%** indicate they **will not use any new digital solutions** in the coming 12 months.

Digital stagnants exhibit similar business factors: they are slightly more likely to be solo entrepreneurs, operate in the construction or industry sectors, be older businesses (7 years or older), and sell exclusively offline.

These factors make them harder to identify and address with targeted interventions. However, they are in need of support to ensure they are not left behind. Digital stagnants rate the importance of digitalization significantly lower than other micro-businesses. Support mechanisms like case studies and peer learning can help demonstrate tangible value to address this gap.

Digital solution use by micro-businesses

Three solutions dominate micro-business digital use

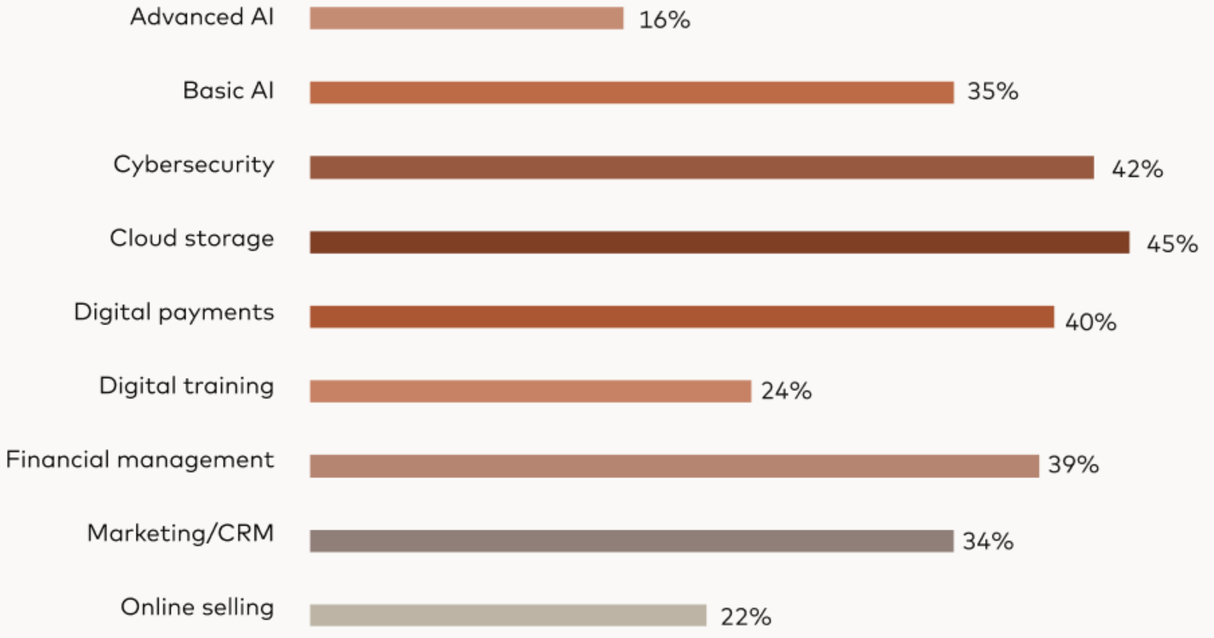
38%

Most EU micro-businesses use only one digital solution. The most commonly used are cloud storage solutions, basic cybersecurity solutions, and digital payments solutions.

40%

But overall use only tells one part of the story: our analysis found that 40% of micro-businesses show similar usage behaviors based on solution types. Grouping these behaviors into solution "bundles" reveals distinct patterns of digital maturity.

Types of digital solutions used by micro businesses



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Digital solution bundles

The “opportunistic” bundle

More than half of micro-businesses are “opportunistic” users of digital solutions (57%). They typically use just one or two solutions for a specific purpose.

The majority digital growers (79%) and stagnants (76%) fall into this category

The “management” bundle

Just over three in ten micro-businesses use the “management” bundle (32%), and are using up to five solutions on average.

Most digital leaders (67%) fall into this category.

The “advanced AI” bundle

One in ten micro-businesses have moved beyond the “management” bundle to also include advanced AI solutions (11%). They are using 6 solutions on average, making advanced AI the distinction that separates this bundle from the others.

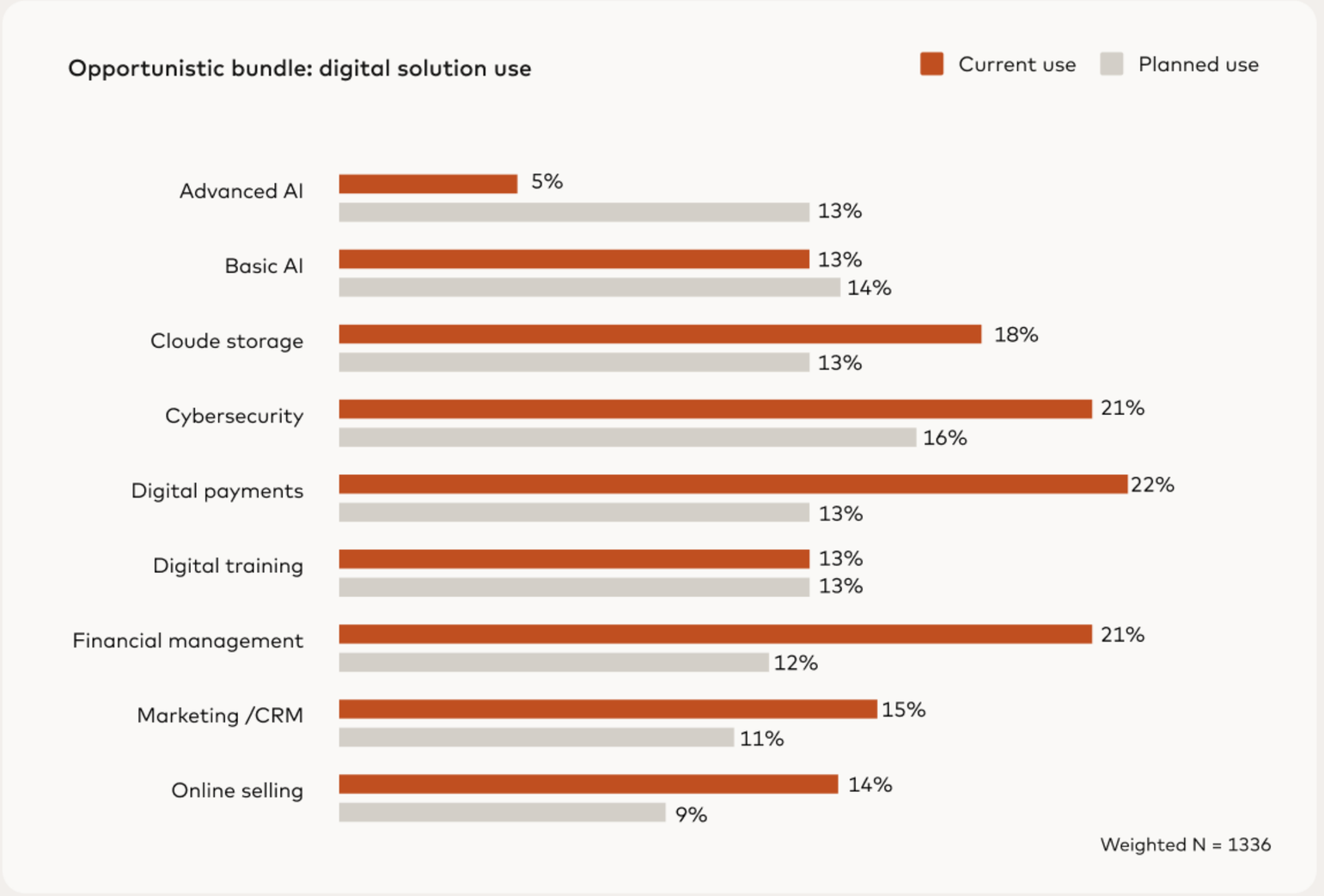
The opportunistic bundle

Current use:

Among current "opportunistic" micro-business users, digital payments, cybersecurity, and financial management solutions are used by nearly one in five, making them the most common.

Planned use:

The majority of opportunistic users (84%) plan to invest in new solutions, most often with cybersecurity tools.



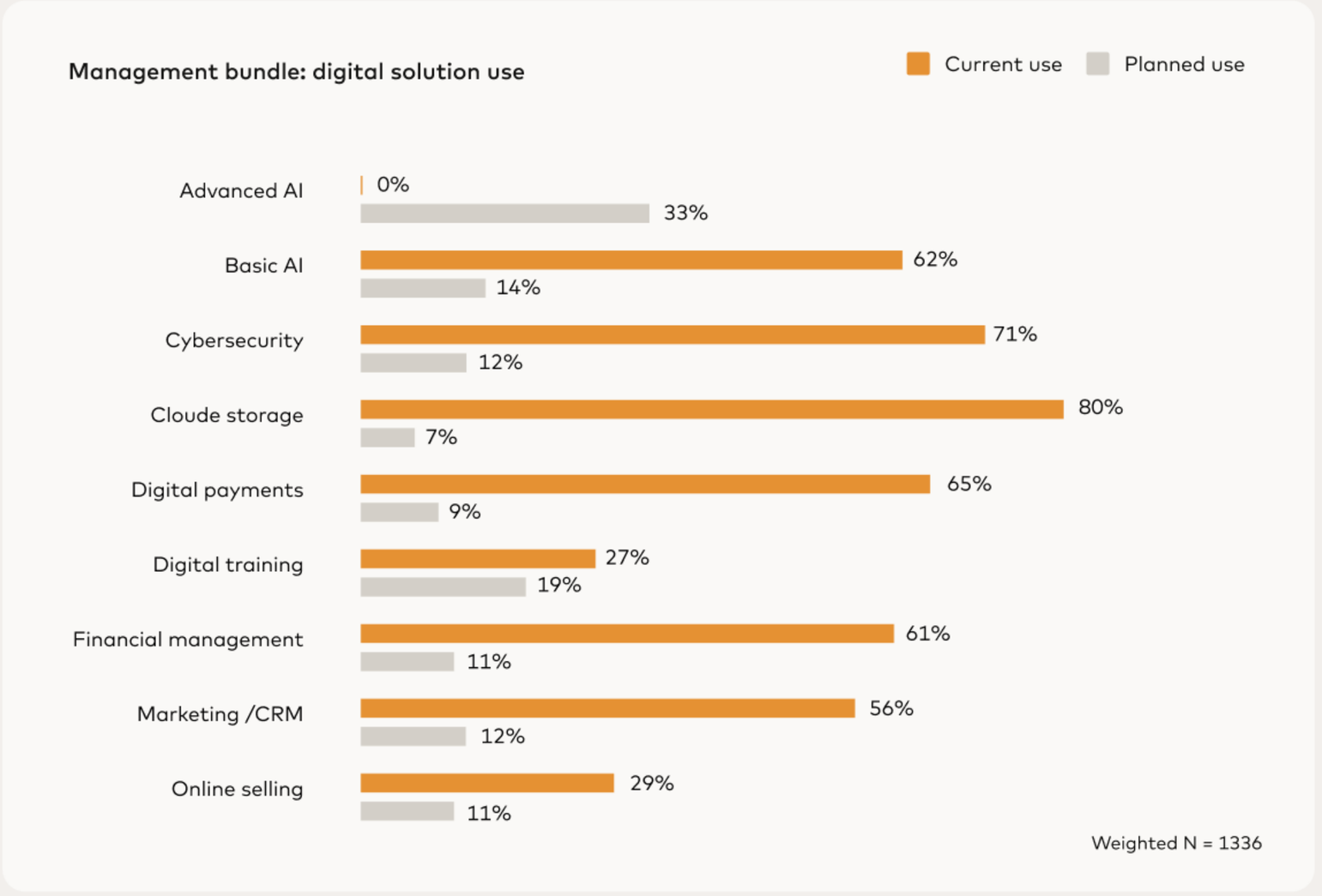
The management bundle

Current use:

Micro-businesses using the management bundle report high use of most solutions, with cloud storage and cybersecurity solutions ranking highest.

Planned use:

More than two-thirds of these businesses plan to expand future use (76%), most often with advanced AI solutions.



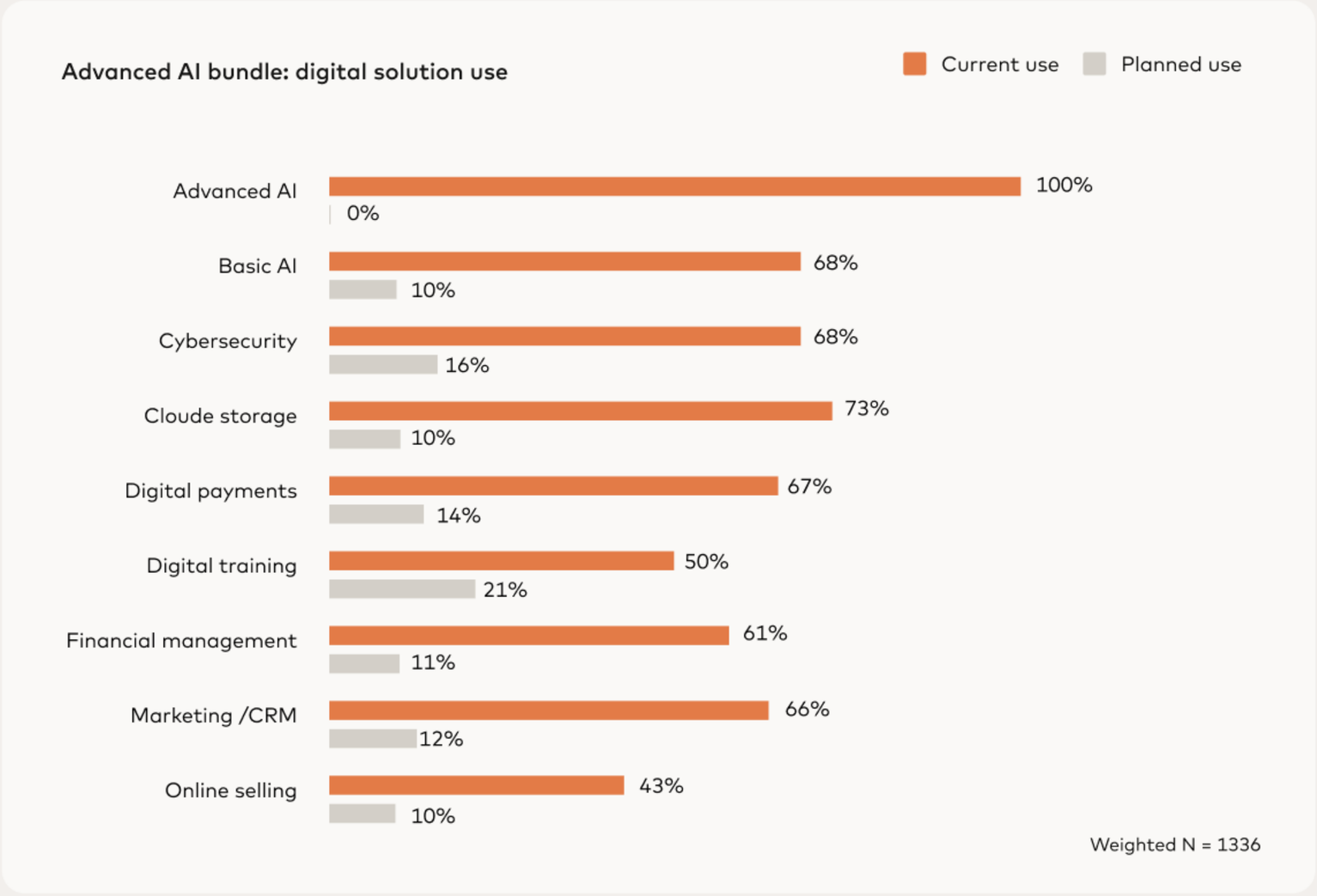
The advanced AI bundle

Current use:

The advanced AI bundle builds on the management bundle. Among micro-businesses using the advanced AI bundle, they report relatively high use of all other solutions. Similar to the more general management bundle, both digital training and online selling are the least commonly reported solutions.

Planned use:

Two-thirds of these businesses plan to expand future use (64%), most often with digital training and cybersecurity solutions.



Usage bundles offer micro-businesses a road map to digitalization

73%

Nearly three-quarters of micro-businesses plan to invest in new digital solutions in the next three years.

Viewing their usage through bundles offers a practical roadmap for this process; these bundles highlight logical next steps toward new solution use, rather than overwhelming businesses with endless options.

For businesses using solutions opportunistically, digital payments are the most common starting point. From there, micro-businesses can layer on cloud storage, cybersecurity, and financial management solutions (the next most-commonly used solutions), forming a natural progression in their digital journey.

For businesses using the management bundle, cloud storage is the most common starting point. Additional solutions such as cybersecurity, basic AI, and digital payments can be layered on if they are not already in use, with advanced AI solutions representing the next stage of expanded use.

Across this road map, cybersecurity solutions act as a universal connector that protects, secures, and enables other solutions. Leading with affordable, accessible cybersecurity solutions as part of a bundle of digital solutions can give micro-businesses the confidence to adopt new solutions and progress more smoothly along their digital journey.

Digital solution deep dive: Cybersecurity use

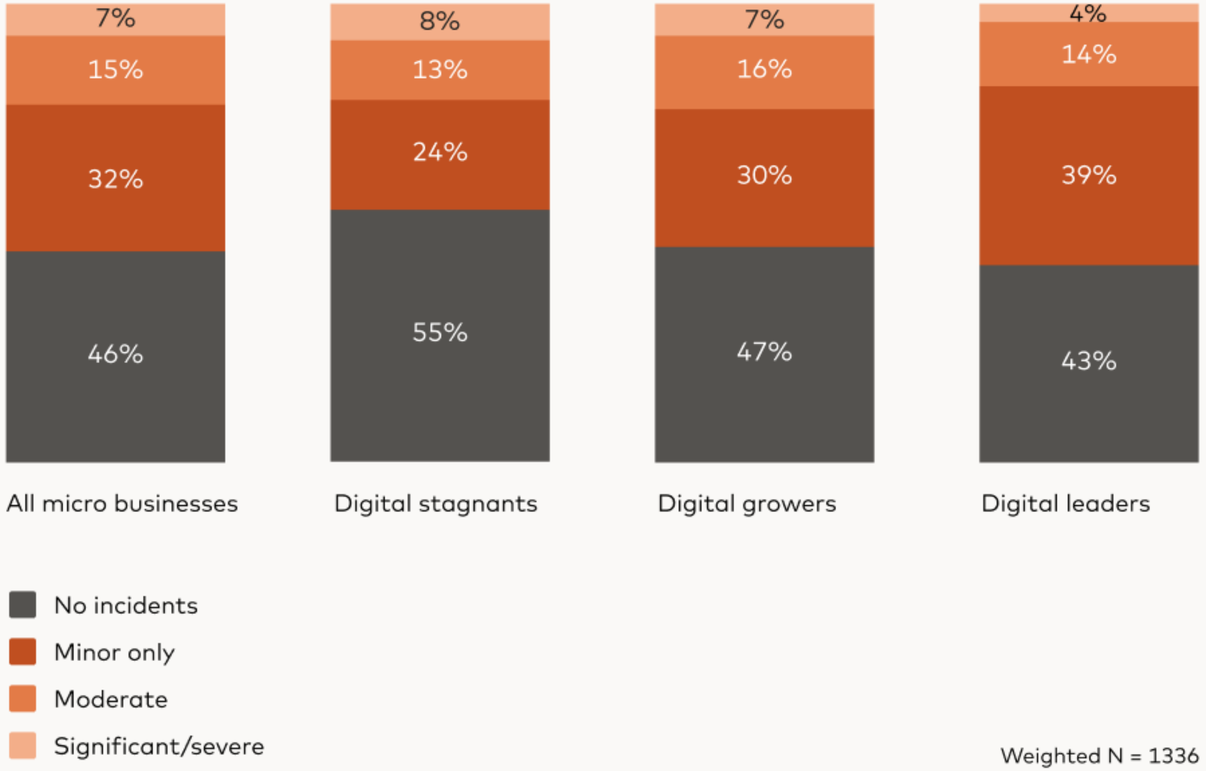
Half of micro-businesses report cyber incidents, but severity varies by digital profile

54%

Cybersecurity incidents are common across all digital profiles, with 54% of micro-businesses reporting a cybersecurity incident in the last two years.

However, digital growers and stagnants bear the brunt of more serious attacks. They are nearly 2x more likely than digital leaders to report severe or significant incidents.

Cybersecurity incident rate and severity by digital profile in last two years



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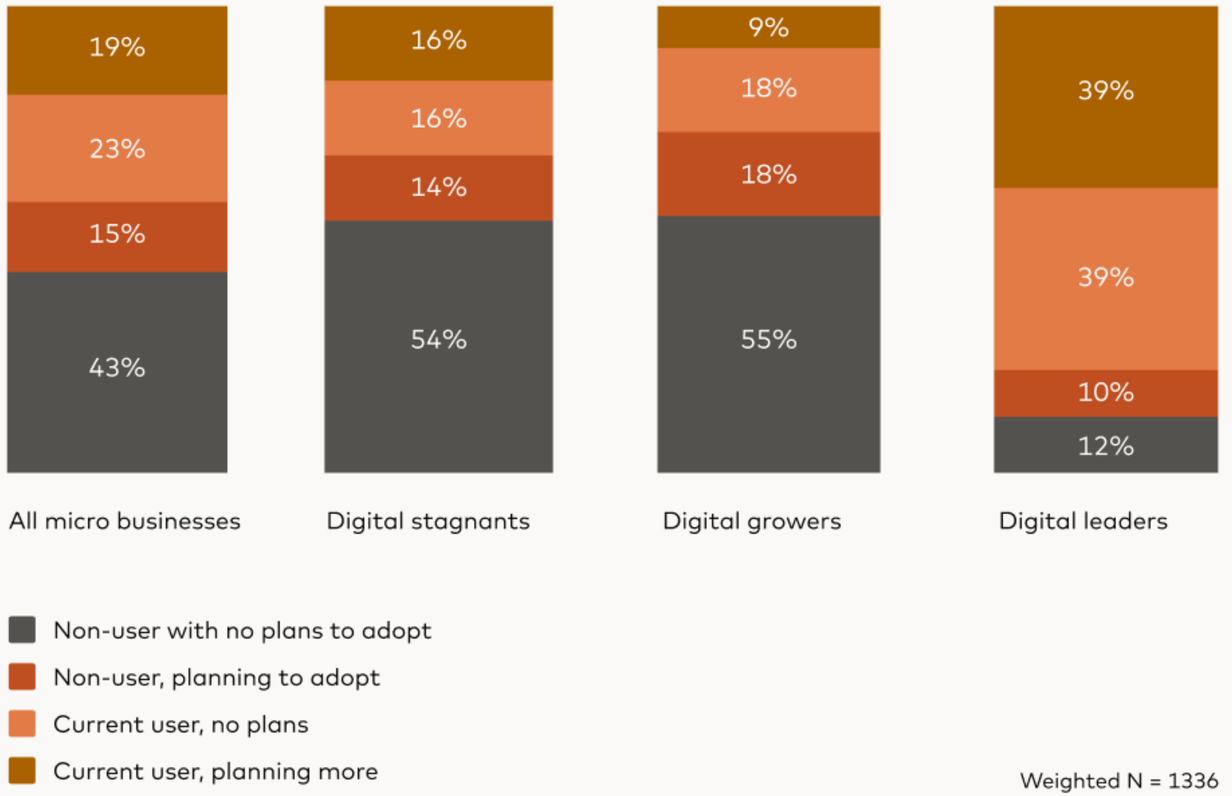
Digital growers and stagnants are under-protected

Despite the risks, many EU microbusinesses (43%) do not use **cybersecurity tools,** and just 15 percent are planning to adopt new tools in the coming 12 months.

Digital growers are especially exposed. They report more overall cybersecurity incidents than stagnants, and more severe incidents than leaders. However, only 27% of digital growers are using cybersecurity solutions—the lowest of all digital profiles. Further, only one-quarter of growers are planning on increasing their use of solutions.

Leaders' lower cybersecurity incident severity rate likely reflects their higher adoption of cybersecurity tools and more mature digital infrastructure.

Current and planned cybersecurity adoption by digital profile

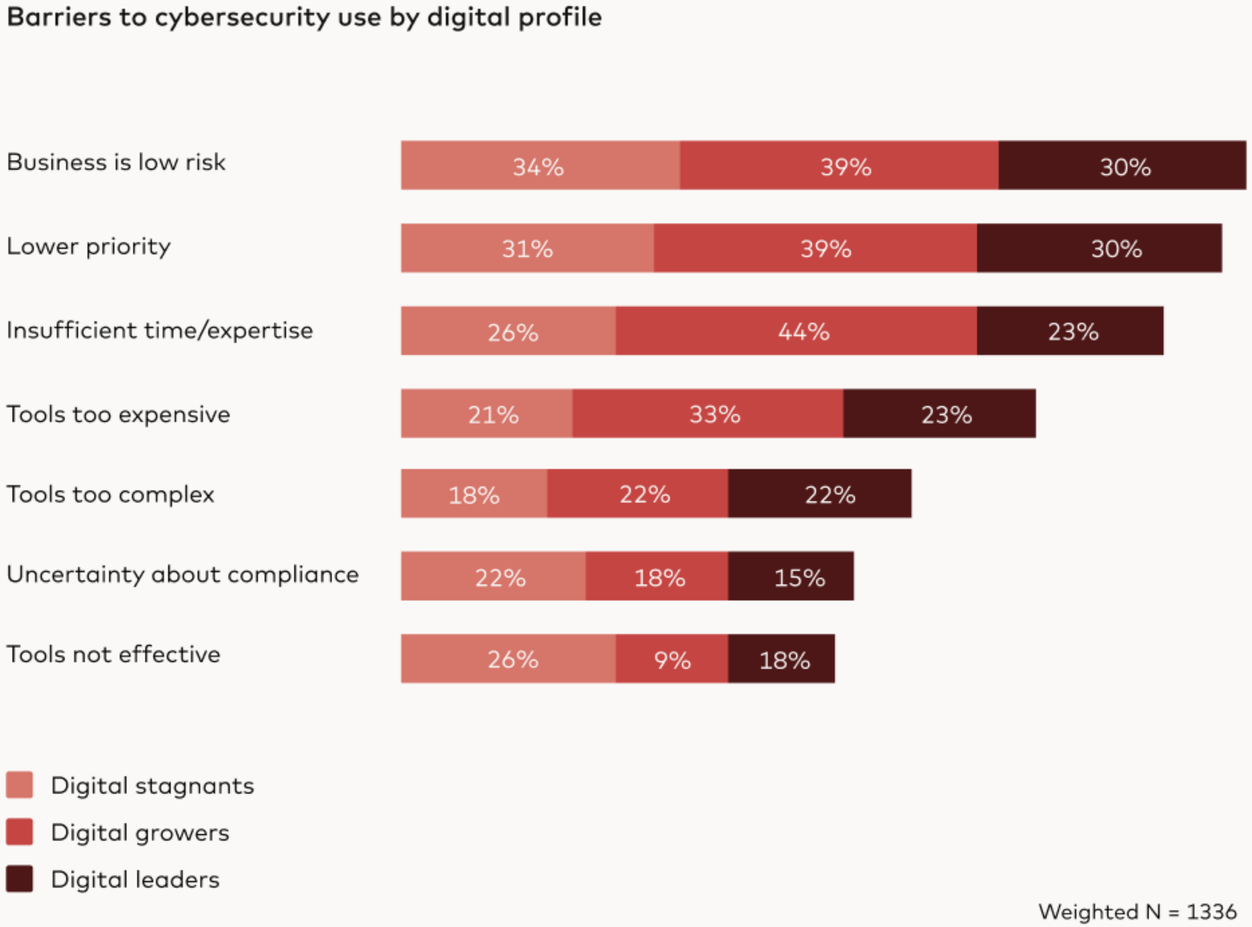


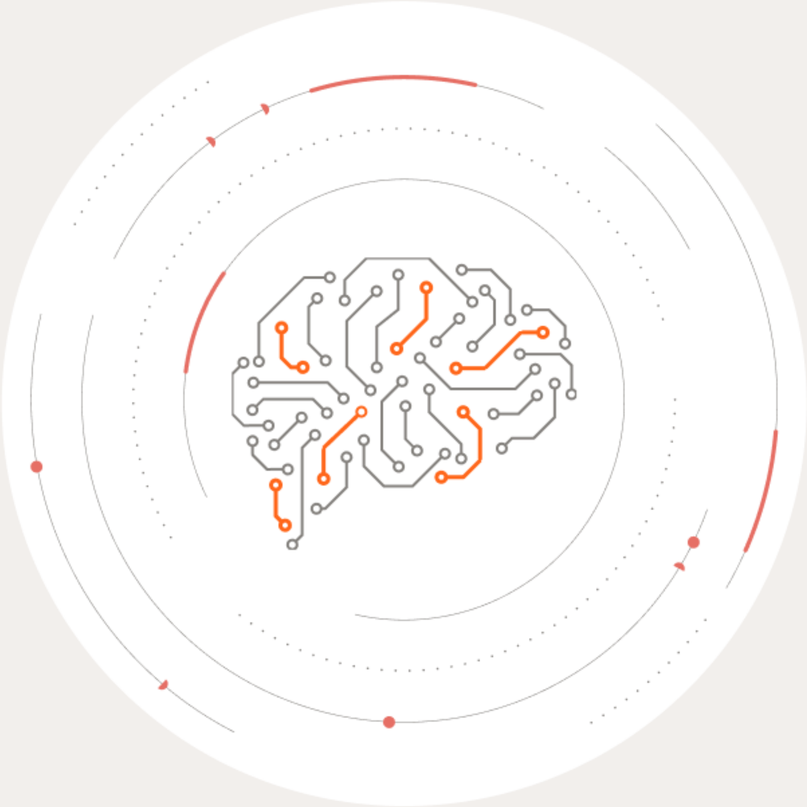
Risk perception and capacity are the biggest barriers to wider cybersecurity use

Across all digital profiles, roughly one-third of micro-businesses report seeing their business as low risk (30%–39%) or cybersecurity as a lower priority. But capacity to implement varies sharply, with 44% of growers citing insufficient time or expertise, compared to just 23% of leaders. Growers see the value but lack the bandwidth.

These barriers are substantially more common than others, suggesting that businesses are held back by risk and priority perceptions or capacity gaps. Better cybersecurity solutions alone won't close this gap.

Most micro-businesses will need to believe they are at risk and prioritize action. For digital growers specifically, addressing the time/expertise gap may be enough, but for digital stagnants the harder work is shifting perceptions.





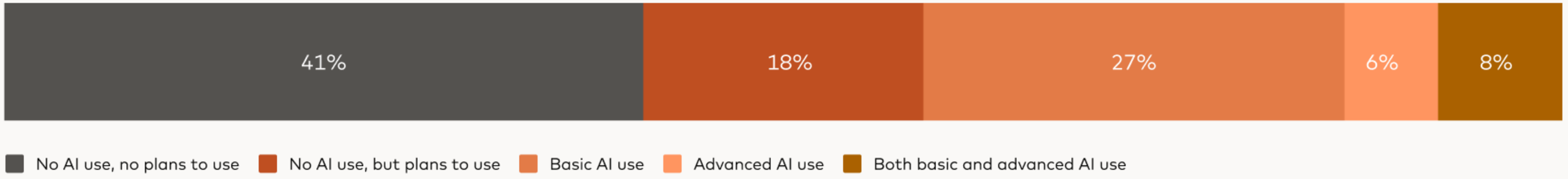
Digital solution deep dive: Artificial intelligence use

The usage divide is stark, with few micro- businesses progressing beyond basic AI use

Nearly two-thirds of EU micro-businesses aren't using AI today (59%). Of these, one-third plan to use AI solutions in the future, but the remaining two-thirds have no future plans to adopt AI.

Most AI users (27%) use only basic tools, like publicly available chatbots. Only 14% have adopted advanced AI solutions that are more tailored to their business needs.

Current AI use amongst EU micro businesses



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Digital profile predicts AI plans, not just current use

Current use:

Digital profile predicts AI use 11x more strongly than all other business factors combined. Digital leaders are far ahead on AI use; growers and stagnants have 82% and 92% lower odds of using AI solutions, respectively. Sector, region, firm age, and firm size show minimal or no significant effects on AI use prediction.

AI future plans:

Mirroring patterns in current use, digital growers and stagnants are significantly less likely than leaders to plan to use AI solutions in the near future (80% and 90% lower odds, respectively).

However, businesses using cybersecurity tools are more likely to plan to use AI in the future. This suggests that cybersecurity may precede AI readiness.

These findings signal that AI-related policy and support interventions should target digital capability gaps and cybersecurity use, not firm or geographic factors.

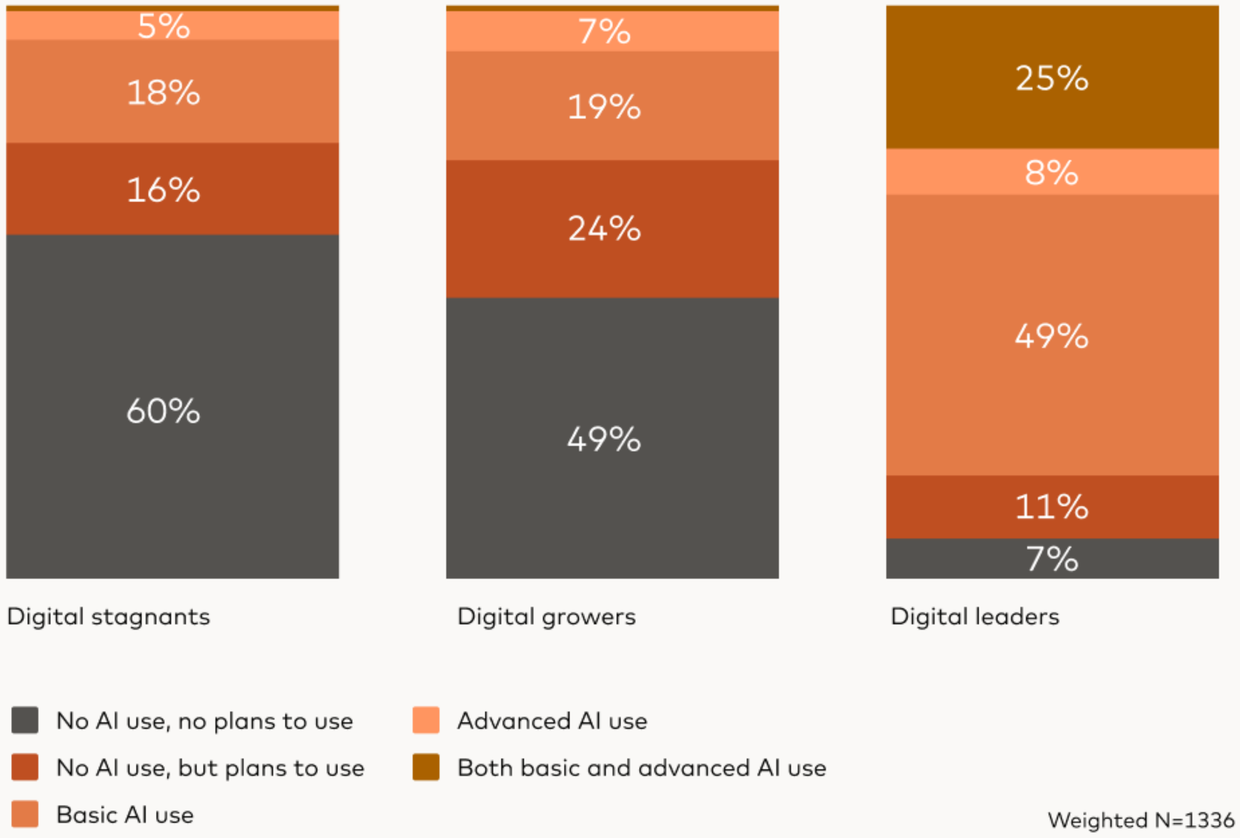
Digital leaders use AI widely, but at basic levels

Digital leaders are nearly 2x more likely than growers or stagnants to use, or be planning to use, AI solutions. 82% of digital leaders are using AI solutions, compared to just 24% of stagnants and 27% of growers.

However, nearly half of digital leaders are only using basic AI solutions (49%).

Making the transition to more advanced solutions (such as predictive analytics and automation systems) remains a challenge for even the most digitally advanced. Micro-businesses will likely need targeted support, skills development, and clearer understanding of the returns these solutions deliver.

Current AI use amongst EU micro-businesses by digital profile



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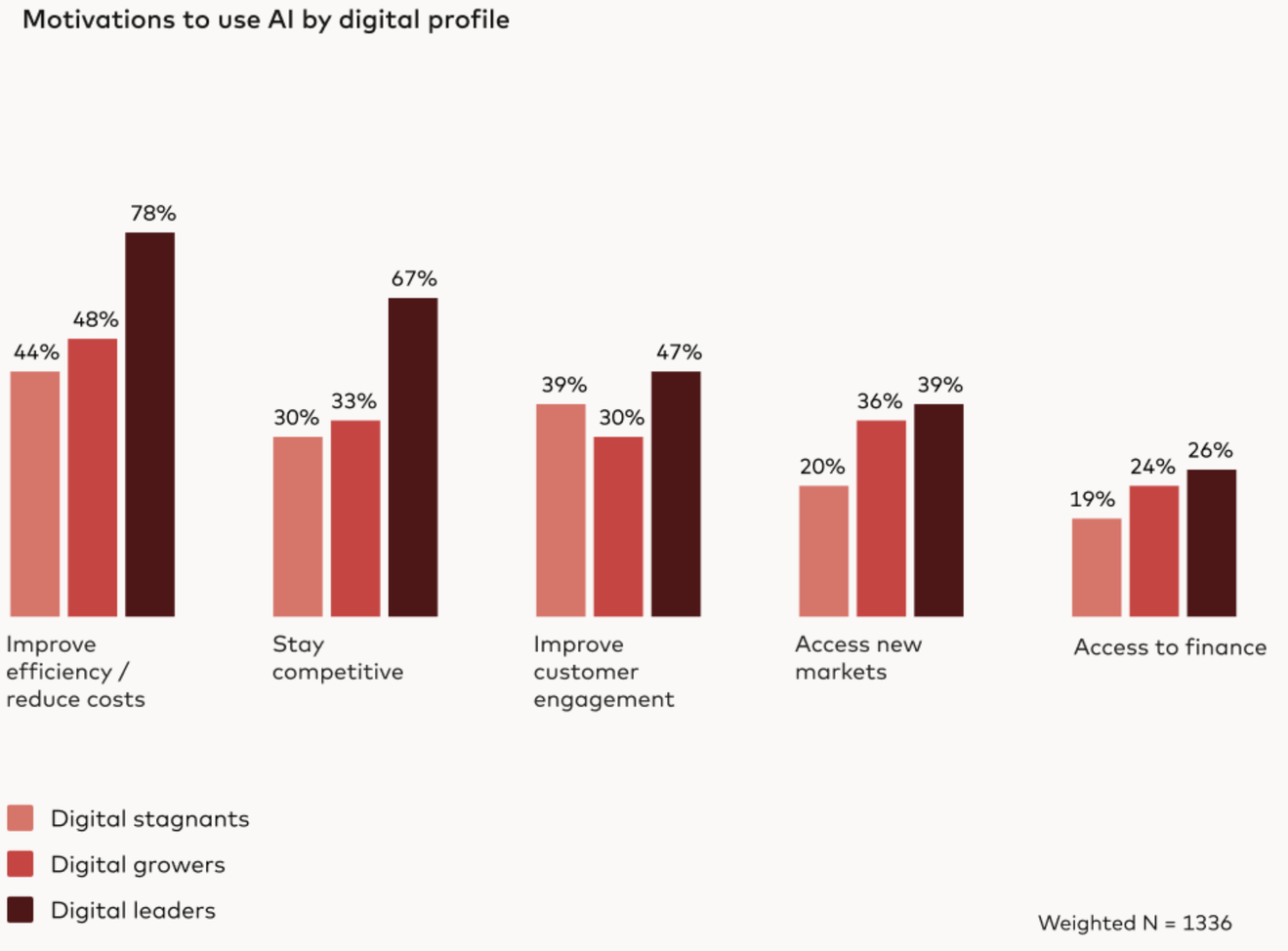
Micro-businesses use AI solutions for different motivations

Efficiency and cost reductions are universal motivations for using AI; beyond these, intent diverges sharply. A deeper look at movitations reveals more nuanced trends:

- Digital leaders are more likely to use AI proactively to stay competitive and improve customer engagement.
- Digital growers are more likely to use AI as a growth engine, to help them access new markets and customers. For growers, their focus on market expansion aligns with their investment intent; AI may be a powerful lever they use in their digital journey.
- Digital stagnants are mostly using AI reactively, to improve customer engagement rather than staying competitive or accessing new markets or finance.



Non-users are unsure or unconvinced about AI

One in two non-users report that AI isn't relevant to their business, and a similar proportion don't know where to start.

Perceived relevance gap
(Lower priority or skepticism)

47%

Knowledge gap
(Unclear start or lack experience)

43%

Risk concerns
(Privacy or regulatory uncertainty)

36%

Perceived relevance gap (47%)

Nearly half of non-users don't see AI as applicable or urgent for their operations. These businesses need sector-specific demonstrations and peer learning networks that illustrate a tangible return on investment in relatable contexts.

Knowledge gap (43%)

Two in five non-users don't know where to start or lack technical expertise to implement AI. They need AI playbooks, subsidized audits, and pre-configured solutions that provide structured guidance from assessment to deployment.

Risk concerns (36%)

One-third of non-users are concerned with privacy, security, and regulatory uncertainty around AI. They need support programs that address these concerns and guidance to integrate good practices.

N=542

02

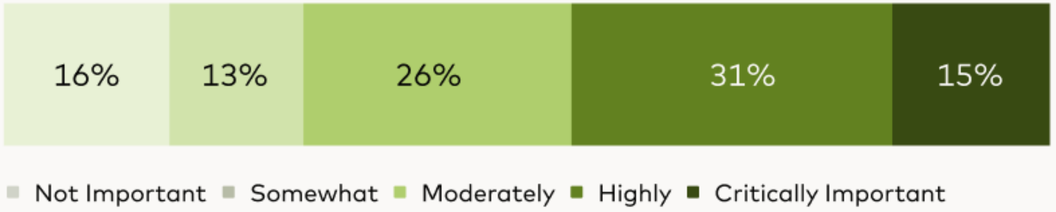
Where are micro-businesses on their sustainability journey?

EU micro-businesses are still in the early stages of their sustainability journey

The sustainability journey mirrors the digital journey. EU micro-businesses see a high value in sustainability solutions for their competitiveness and have strong intentions to adopt more solutions in the near future.

Nearly one in two EU micro-businesses rate sustainability solutions as highly or critically important for their competitiveness.

Sustainability value perception score distribution



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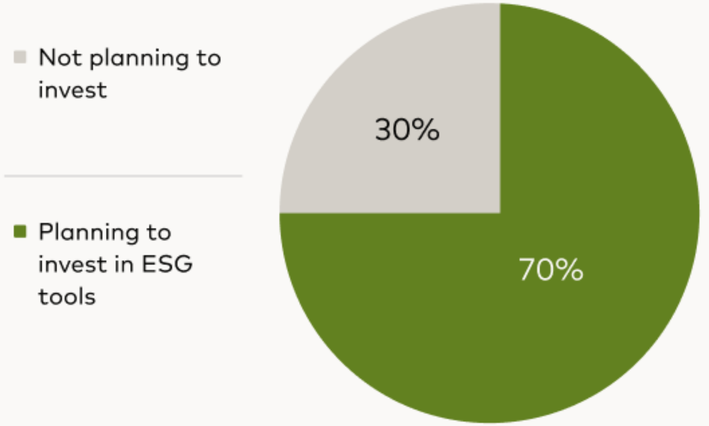
70% plan to invest in sustainability solutions in the next 12 months.

Sustainability investment plans



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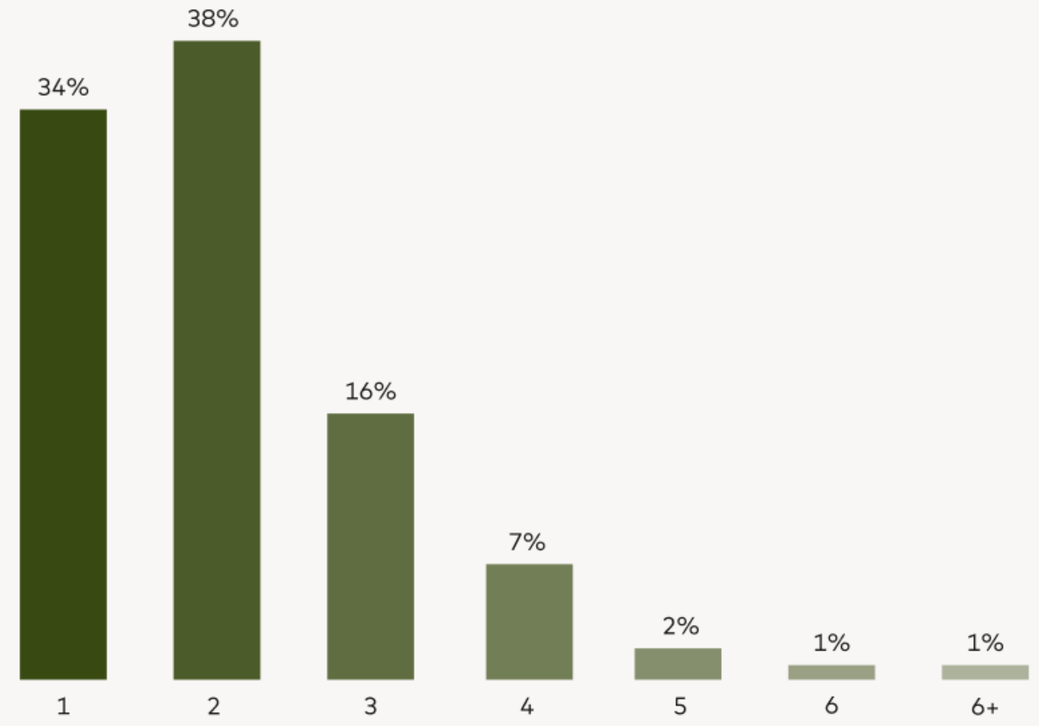
Despite intentions, use of sustainability solutions lags

Current solution use is still limited. Over one-third of small businesses only use one solution (38%); a further one-third use none (34%).

The most common solutions used address energy optimization (22%), sustainability certification (21%), and sustainability guidance (17%).

The gap between reported importance and current use suggests that micro-businesses are motivated but need the right moment, tools, or support to act.

Number of sustainability solutions currently in use



Weighted N = 1336

Sustainability profiles of micro-businesses

Investment intent is the difference between growth and stagnation

Using a similar behavioral lens as that developed for the digital journey, our analysis highlighted three profiles of micro-businesses along the sustainability journey.

What emerges are three cohorts of micro-businesses that show incremental increases in how they value sustainability solutions, the number of solutions they use, and their investment intentions.

Sustainability growers show equally high investment intent as sustainability leaders (100% vs. 97%), creating a clear distinction from sustainability stagnants, where investment intent is zero.

Sustainability profiles as defined by key dimensions

Weighted N = 1336

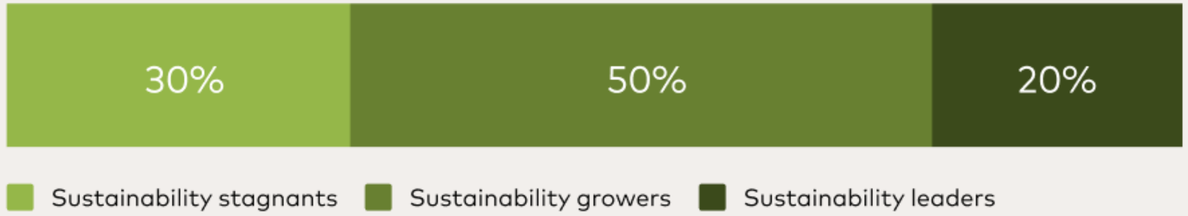
- **Sustainability profiles of micro-businesses**

Micro-businesses cluster into sustainability profiles

Half of EU micro-businesses are sustainability growers, while 20% are sustainability leaders and 30% are sustainability stagnants.

Growers, in particular, **show strong future commitment to sustainable solutions, slightly more so than leaders.**

Sustainability profile breakdown



Weighted N = 1336

Sustainability stagnants

- Rate sustainability importance 2.1 out of 5
- Using less than 1 sustainability solution, on average
- No plan to invest in sustainability solutions

Sustainability growers

- Rate sustainability importance 3.4 out of 5
- Using 1 sustainability solution, on average
- 100% plan to invest in sustainability solutions

Sustainability leaders

- Rate sustainability importance 4.1 out of 5
- Using 3 sustainability solutions, on average
- 97% plan to invest in sustainability solutions

Gender-diverse leadership, sector, and region are the strongest predictors of sustainability leadership

Using structural equation modeling to isolate factors that matter most to sustainability journey, three predictors stand out.

Leadership gender diversity:

Businesses with mixed-gender leadership teams are 4x more likely to be sustainability leaders. These teams consistently value sustainability more, invest more, and use more solutions. It's the single biggest predictor—more important than sector, size, or region.

Sector:

Businesses in manufacturing and construction sectors are 3x more likely to adopt sustainability solutions than services-focused businesses. For them, sustainability isn't optional; it's tied directly to competitiveness. They're investing more and implementing faster.

Region

Eastern and Southern-based European businesses are 2x more likely to be sustainability leaders compared to their Western European counterparts. Businesses in these regions assign higher value to sustainability and report greater investment intentions.

**Findings based on structural equation modeling, controlling for business size, age, and other covariates.*

Efficiency gains top motivations for use of sustainability solutions

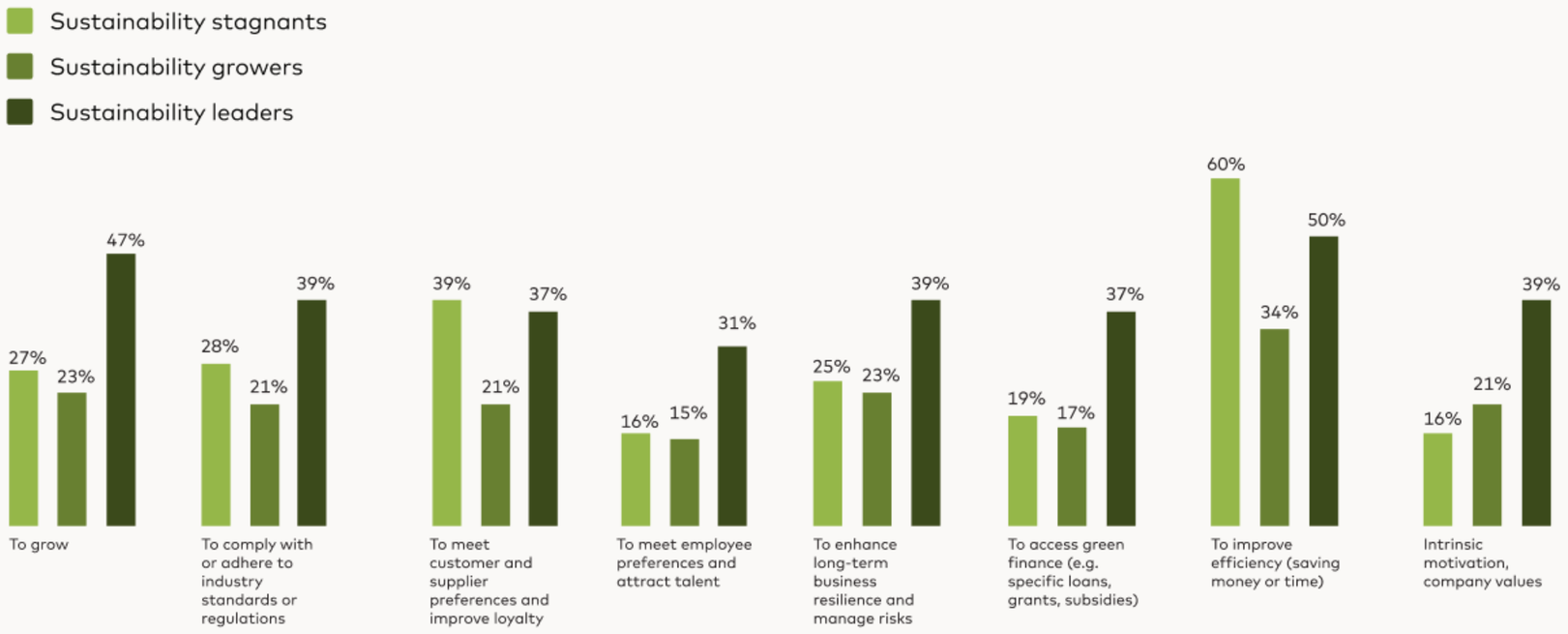
Across all sustainability profiles, efficiency gains are the most common motivation cited for adopting solutions. It is the only motivation where stagnants lead.

Sustainability leaders are significantly more likely to use solutions for value creation, with growth (47%), resilience (39%), company values (39%), access to finance (37%), and compliance (39%) all clustered together. They are motivated by a range of benefits, not only by cost-cutting.

Sustainability stagnants also reported (relatively) high motivation from external pressures, suggesting that supply chain pressure may force stagnants to respond. Efficiency gains open the door, but supply chain pressure may be a more powerful lever to drive long-term use.

Sustainability motivations by profile

Weighted N = 1336



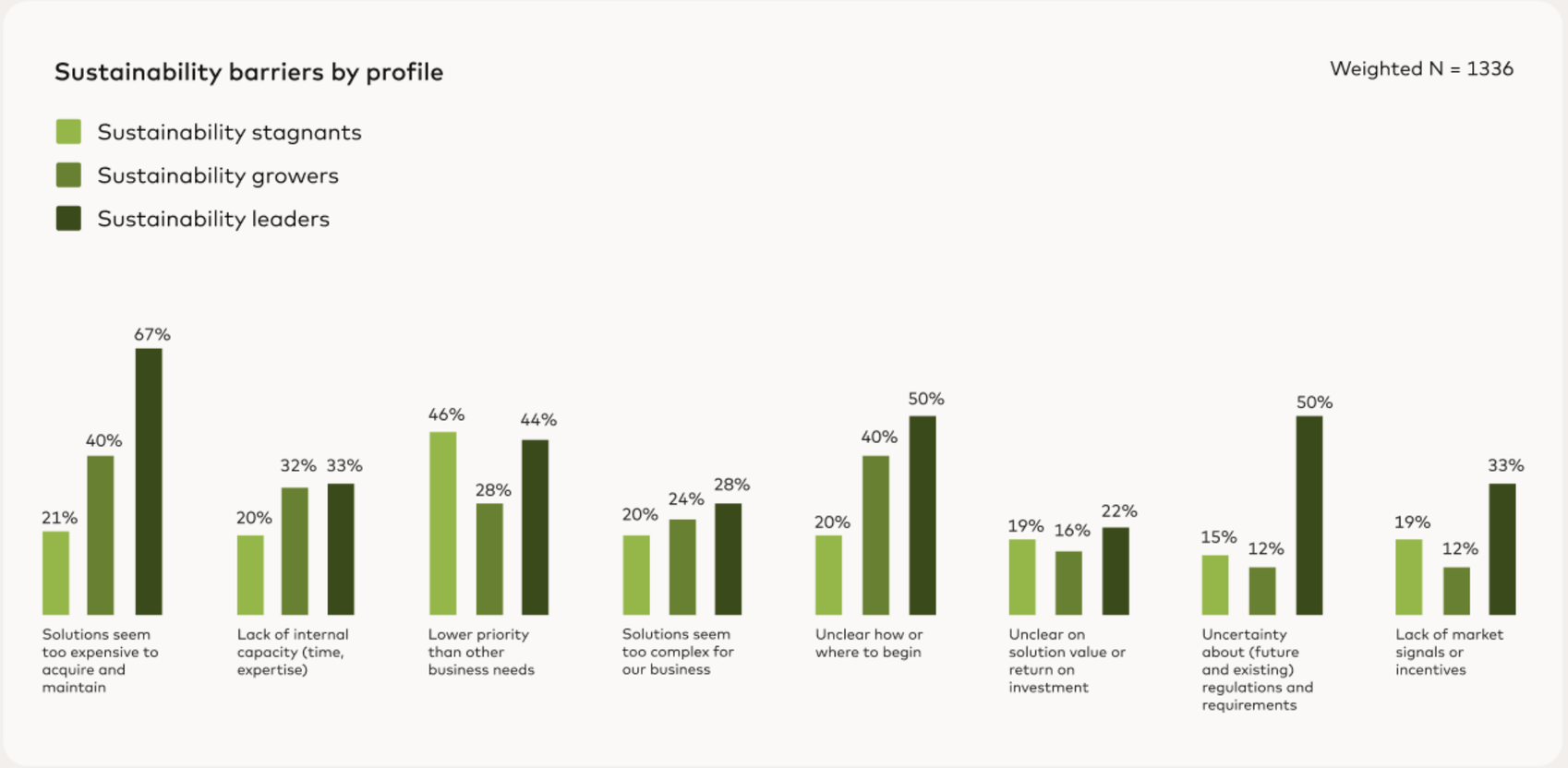
Barriers to solution use increase as micro-businesses advance along the sustainability journey

Costs are a concern across all sustainability profiles. But as micro-businesses advance along the sustainability journey, they report more barriers to implementing sustainability solutions.

Sustainability stagnants are most likely to report solutions as being a low priority (46%), followed by concerns over costs (20%). Other barriers barely register, suggesting disengagement rather than active obstacles.

Sustainability growers are blocked by costs (40%) and internal capacity. They are unclear on how to begin (40%), lack time/expertise (32%), and have competing priorities (28%).

Sustainability leaders report the highest, and most diverse barriers, ranging from costs (67%) to internal barriers (clarity on where to begin (50%)), to external doubts (uncertainty about regulations and requirements (50%)). These are barriers that emerge with active use of more solutions.



Costs are consistent support needs across all sustainability profiles

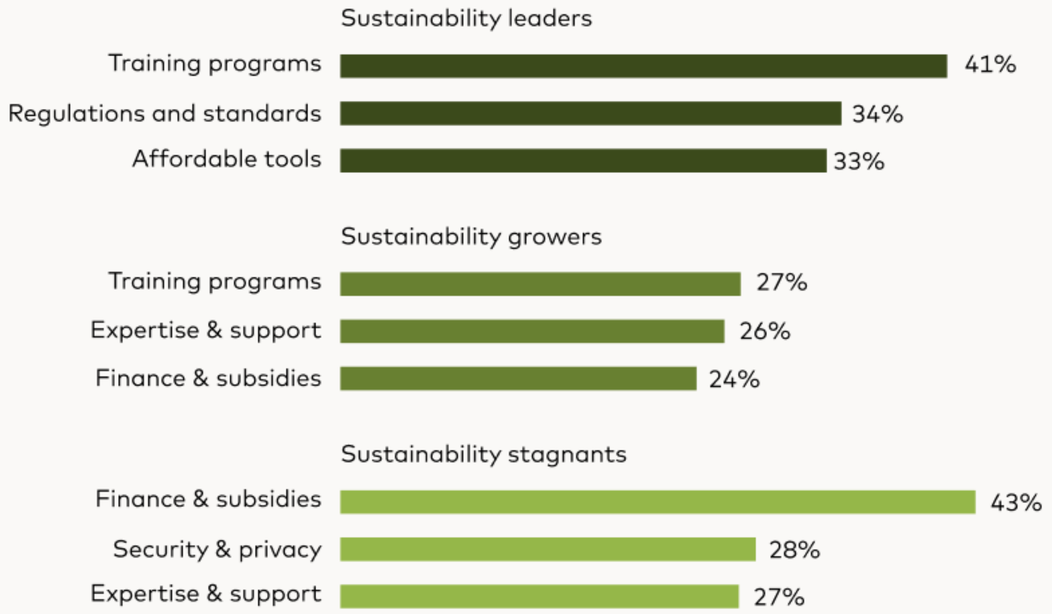
Affordability or financing are identified by all sustainability profiles. As micro-businesses advance along the sustainability journey, they report more diverse support needs.

Sustainability stagnants: Finance and subsidies dominate as support needs (43% vs. 28% for leaders and 24% for growers), indicating that costs are a primary blocker or justification for inaction. Without financial support, these businesses are unlikely to advance.

Sustainability growers: One-quarter of growers report needing support to address capacity and costs, a direct reflection of the barriers they report.

Sustainability leaders: In line with reporting more diverse barriers, leaders also report more diverse support needs, with a high demand for training (41%), regulations and standards (34%), and affordable tools (32%). Cost is just one concern among many.

Top three support needs by sustainability profile



Weighted N = 1336

How do digital and sustainability profiles intersect for micro-businesses?

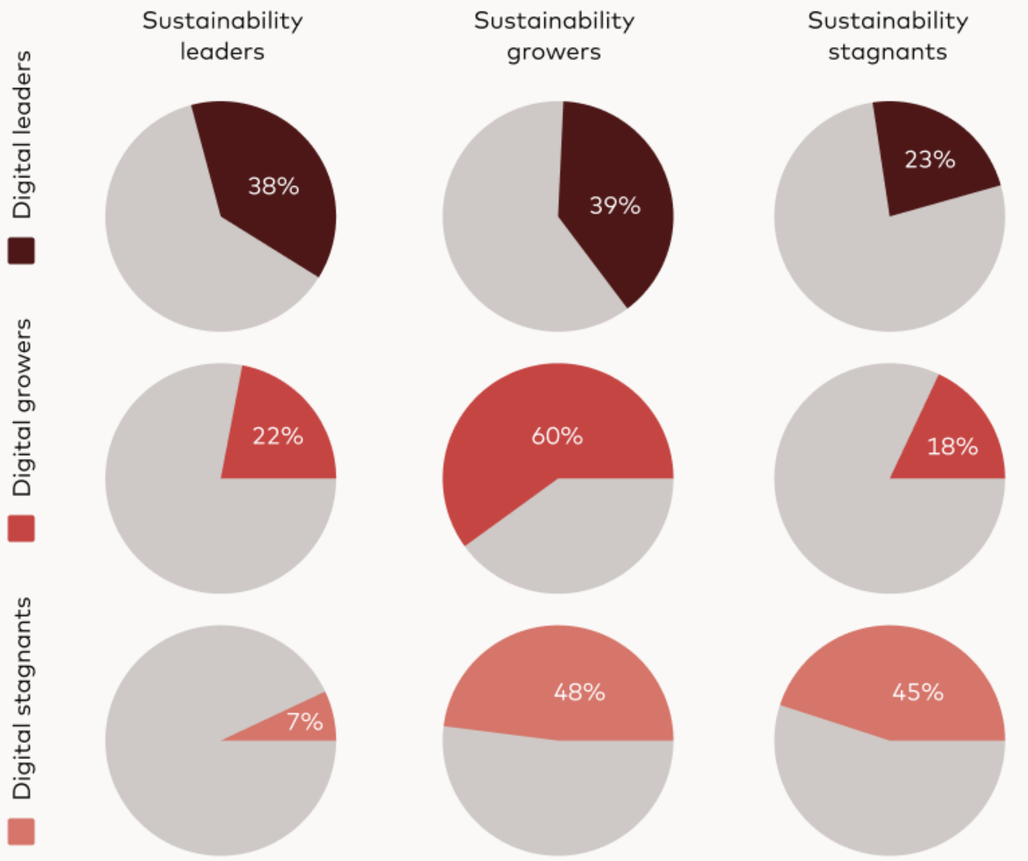
Despite intentions, use of sustainability solutions lags

The EU's twin transition agenda positions digital and sustainability transformation as mutually reinforcing. Our analysis reveals that this is true for a subset of micro-businesses, particularly growers, but is less valid for leaders and stagnants.

The strongest pattern is among growers: businesses actively developing their digital capabilities are 20% more likely to be advancing on sustainability (or vice versa). This suggests that a commitment to growth is a key trait across these businesses. Their "growth mindset" enables them to tackle both transitions.

At the extremes, however, the relationship weakens. Digital leaders show no clear sustainability pattern; they're as likely to be sustainability stagnants as sustainability growers. Digital stagnants rarely lead on sustainability (just 5%)—though notably, 44% are sustainability growers, suggesting some businesses prioritize sustainability over digital.

Top three support needs by sustainability profile



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03

Looking ahead

An openness to growth fuels to transition EU micro-businesses into both digital and sustainability leaders...

Digital and sustainability use tend to move together. This may reflect shared growth orientation, but also practical factors for how sustainability solutions are often marketed on digital platforms and require digitized data to function. Either way, growers are already pursuing both journeys, making growth orientation an an underlying trait to target in the twin transition.

This finding points to a broader strategic insight from our research: **the path to digital transformation runs through the growers.**

Digital stagnants face a value perception gap; they're unconvinced that digital tools are relevant to their business. Digital leaders, meanwhile, are already advancing and face implementation challenges at the frontier. But digital growers occupy a unique position: they see the value, they're actively investing, and they're receptive to support. They also show the highest intent to use new solutions across both digital and sustainability domains.

Yet growers face real barriers. They report capacity and bandwidth—not skepticism—as primary barriers. They're stretched between growing their core business and building the infrastructure to support that growth. Without targeted support, many risk stalling before reaching their transformation potential.

...and policy support can help pave the way forward

The policy opportunity is clear.

Interventions and programs for micro-businesses that combine digital and sustainability support—addressing both journeys simultaneously while fostering digital inclusion and capabilities—align with how growers are already behaving. Sector-specific implementation support, peer learning networks, and integration guidance address the barriers growers actually face. And because digital profile predicts AI use more strongly than any other factor, investing in growers today builds the foundation for technology use tomorrow.

Micro-businesses don't transform in isolation.

Digital advancement enables sustainability solution use. A commitment to sustainability signals growth orientation, and growth orientation—more than sector, size, or region—is what separates micro-businesses that are moving forward from those standing still. The twin transition isn't two separate journeys. For Europe's micro-businesses, it's one.

The Mastercard Strive EU program is committed to boosting the resilience and growth of micro-businesses by surfacing new innovations that help them get capital, go digital, and gain networks and know-how. By building a connected and supportive ecosystem, the Mastercard Strive EU program can ensure that micro-businesses in Europe are not only resilient but also positioned to lead in digital and sustainable transformation.

04

APPENDIX

Glossary and definitions

- **Micro-businesses:** Data presented in this Snapshot Study comes from businesses with up to and including 10 employees. This is a slight deviation from the established definition of EU micro-businesses of "fewer than 10" employees. Throughout the study we often differentiate between solo entrepreneurs and businesses with employees.

- **Sectors:** We differentiate between micro-businesses in construction, industry, manufacturing, and services sectors.

- **Regions:** There is no single official EU definition of "region," as it can refer to different classifications. This Snapshot Study defines European sub-regions according to EuroVoc:
  - Central & Eastern: Bulgaria, Croatia, Czechia, Hungary, Poland, Slovakia, Slovenia
  - Northern: Denmark, Estonia, Finland, Latvia, Lithuania, Sweden
  - Southern: Greece, Italy, Portugal, Spain
  - Western: Austra, Belgium, France, Germany, Ireland, The Netherlands

- **Digital solutions included:**
  - Basic AI tools (e.g., ChatGPT, Claude, Grammarly, Microsoft Copilot)
  - Advanced AI solutions (e.g., custom chatbots, predictive analytics, automation systems)
  - Cybersecurity measures (including antivirus software, password managers, firewalls)
  - Cloud storage and computing (e.g., Google Drive, Dropbox, Microsoft OneDrive)
  - Marketing and customer management tools (e.g., social media, email marketing, CRM)
  - Financial and project management software (e.g., accounting, invoicing, project tracking)
  - Online selling platforms (e.g., Shopify, Etsy, social media marketplaces)
  - Digital payment solutions (e.g., PayPal, Stripe, Square)
  - Digital skills training for staff

Glossary and definitions

- **AI solutions included:**
  - Basic AI tools
    - General-purpose AI assistants (e.g., ChatGPT, Claude, Bard, Perplexity)
    - AI-enhanced productivity tools (e.g., Grammarly, Microsoft Copilot, Jasper)
  - Advanced AI solutions
    - Specialised off-the-shelf AI software (e.g., customer service chatbots, sales forecasting, inventory management)
    - Custom-developed AI systems (created specifically for your business by internal or external experts)
    - Integrated AI features within your existing business software
    - Other, specify

- **Sustainability solutions included:**
  - ESG reporting tools: software that helps track and report sustainability data for compliance
  - Carbon management tools: calculators or software to measure and manage your carbon footprint
  - ESG guidance platforms: tools that provide advice or frameworks for sustainability management
  - Energy optimization tools: AI or software that helps reduce energy consumption
  - ESG monitoring tools: systems that track sustainability KPIs and risks
  - Data integration platforms: tools that collect ESG data using standards like DNK or other frameworks
  - Certifications and labels: environmental certifications like ISO 14001 or industry-specific eco-labels
  - None of the above
  - Other, specify

- **Cybersecurity solutions included:**
  - Training on cybersecurity (at least yearly)
  - Use of strong and secure passwords
  - Use of two- or multifactor authentication
  - Use of regularly updated anti-virus and anti-malware software
  - Use of VPN or firewall system
  - Regular cyber security assessment with cybersecurity expert
  - Regular updates of operating systems and applications
  - A web filter (safe surfing)
  - Data encryption on endpoints (laptops, smartphones, tablets)
  - Biometric screen locks on smartphones and tablets
  - Other, specify

Snapshot Study design

- We used a structured questionnaire consisting of 30 questions about micro-business digital and sustainability transitions, including value and risk perceptions, solution use, investment strategies, barriers, and support needs

- In partnership with IntoTheMinds, we collected responses from 1,336 micro-businesses in 23 EU countries using an existing business research panel and translated questionnaires. The number of micro-businesses in our sample population broadly corresponds with the total number of micro-businesses per country (Eurostat, 2023) with an upward adjustment in some focus countries of the Mastercard Strive EU Innovation Fund.

- Limitations: The Snapshot Study relies on a non-random sample. Convenience sampling means coverage bias may exist for hard-to-reach populations. Response rates varied by country, limiting country-level inference. Non-response bias cannot be fully assessed without demographic data on non-respondents. Weighting cannot correct for measurement error or self-selection into digital programs.

- Statistical approach: The sample population underwent two-stage post-stratification weighting to adjust for regional and firm size sampling imbalances. Weights were calculated based on 2023 Eurostat business demographics data, with region-level and firm size adjustments applied multiplicatively and normalized to preserve sample size.

- Validity and robustness: The resulting weights demonstrated properties within the recommended thresholds: maximum-to-mean ratio of 2.01, coefficient of variation of 0.61, and design efficiency of 73%. All region × firm size stratification cells contained adequate sample sizes (minimum n=51), supporting stable weight estimation.

- This design supports:
  - EU-wide aggregate estimates
  - Regional comparisons (Northern/Southern/Western/CEE)
  - Firm size comparisons (solo entrepreneurs vs. 2–10 employees)
  - Directional insights on sector/business model/leadership, etc.

- It cannot support country-specific claims (8 countries with n<15), sector-specific estimates (known deviations from Eurostat) or claim perfect population representativeness.

Digital profile methodology

We developed digital profiles by combining businesses' perceptions, intentions, and actual usage behaviors. This attempts to capture the relationship between digital attitudes and actions.

Three variables define our digital profile segmentation:

- Value perception: How important businesses rate digitalization to their competitiveness (1–5 scale)
- Current solution use: Number of digital solutions currently in use (0–9 count)
- Investment commitment: Plans to grow, maintain, or reduce digital investment over the next 3 years (binary)

These variables capture both the current state (use) and future trajectory (perception and investment commitment), creating a segmentation that identifies micro-businesses at different stages of digitalization.

Statistical approach

We employed k-means clustering to group micro-businesses based on similarity across the three variables.

The algorithm:

1. Standardizes all variables to prevent scale bias,
2. Iteratively assigns micro-businesses to 3 clusters to minimize within-group variance, and
3. Converges on stable groupings that maximize between-group differences.

Validity and robustness

The resulting personas indicate strong validity:

- Internal consistency: Clear separation across all defining variables (ANOVA $p < 0.001$)
- External validity: Significant associations with independent variables not used in clustering (customer interaction model: $\chi^2 = 145.21$, $p < 0.001$; business model: $\chi^2 = 43.89$, $p < 0.001$)
- Sample representation: All micro-businesses with complete data on the three variables (n=1,303, 100% of weighted sample)

Sustainability profile methodology

We developed sustainability profiles by combining micro-businesses' value perceptions, investment intentions, and actual usage behaviors. This attempts to capture the relationship between sustainability attitudes and actions.

Three variables define our sustainability profile segmentation:

- Value perception: How important micro-businesses rate sustainability solutions for competitiveness (1–5 scale)
- Current use: Number of sustainability solutions currently in use (0–7 count)
- Investment commitment: Plans to use any sustainability solutions over the next 12 months (binary)

These variables capture both the current state (use) and future trajectory (perception and investment commitment), creating a segmentation that identifies micro-businesses at different stages of sustainability.

Statistical approach

We used k-means clustering to group micro-businesses based on similarity across the three variables.

The algorithm:

- Standardizes all variables to prevent scale bias,
- Iteratively assigns micro-businesses to 3 clusters to minimize within-group variance, and
- Converges on stable groupings that maximize between-group differences.

Validity and robustness

The resulting sustainability profiles indicate strong validity:

- Internal consistency: Clear separation across all defining variables (ANOVA $p < 0.001$)
- External validity: Significant associations with independent variables not used in clustering (digital maturity: $\chi^2 = 157.75$, $p < 0.001$; leadership structure: $\chi^2 = 90.25$, $p < 0.001$)
- Sample representation: All micro-businesses with complete data on the three variables (n=1,336, 100% of weighted sample)

Thank you

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Despite the risks, many EU microbusinesses (43%) do not use cybersecurity tools, and just 15 percent are planning to adopt new tools in the coming 12 months.

Digital growers are especially exposed. They report more overall cybersecurity incidents than stagnants, and more severe incidents than leaders. However, only 27% of digital growers are using cybersecurity solutions—the lowest of all digital profiles. Further, only one-quarter of growers are planning on increasing their use of solutions.

Leaders' lower cybersecurity incident severity rate likely reflects their higher adoption of cybersecurity tools and more mature digital infrastructure.