A roadmap for a resilient and prosperous Europe

Supporting small businesses in navigating the twin transition to a digital and sustainable Europe

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strive

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The Mastercard Center for Inclusive Growth advances equitable and sustainable economic growth and financial inclusion around the world. The Center leverages the company's core assets and competencies, including data insights, expertise, and technology, while administering the philanthropic Mastercard Impact Fund, to produce independent research, scale global programs, and empower a community of thinkers, leaders, and doers on the front lines of inclusive growth.

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Mastercard Strive is a portfolio of philanthropic programs supported by the Mastercard Center for Inclusive Growth and funded by the Mastercard Impact Fund. With programs in more than 20 countries around the world, Mastercard Strive aims to reach 18 million small businesses to go digital, get capital, and access networks and know-how.

Caribou is a global consultancy working with ambitious foundations, companies, and governments to accelerate and deliver impact in a digital age.

We apply deep technical expertise and rigor to strategy design, fund and program management, impact measurement, and actionable research.

We work towards a world in which digital economies are inclusive and sustainable, driven by secure livelihoods, innovative business models, and bold climate action.

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A note on terminology

Before we dive in, a few definitions are in order. This report defines "MSEs" as micro- and small enterprises. A micro-business is one with one to nine employees, and a small business has 10 to 49 employees. Anything bigger than this (i.e., 50 or more employees) is defined as medium or large and is only included in this report for statistical reasons. While much of the existing literature on MSE performance includes medium enterprises, the Mastercard Strive EU program focuses on micro-enterprises.

This focus is due to several reasons. First, there is growing consensus that businesses of this size are essential to the economic wellbeing of their communities. More important, however, is the Mastercard Center for Inclusive Growth's position that the experiences and challenges of these micro-businesses are often drastically different than those of their (relatively) larger peers, and careful attention and targeted research are required to support them adequately. This report, the first publication from the Mastercard Strive EU program focused on micro-companies in the EU and their supporting ecosystem, is therefore dedicated to these formidable, yet often underappreciated, pillars of our communities and economies.

For further details about each business segment, please see the glossary in the appendix.

> In an era defined by rapid change, the growth and resilience of Europe's micro- and small enterprises have never been more critical to the health and prosperity of the wider economy.

Small businesses are the backbone of Europe's economy, and their success reflects the strength and adaptability of our societies. Mastercard recognizes the crucial role small businesses play in driving innovation, job creation, and inclusive growth. Thus, the Mastercard Strive EU program was launched, leveraging Mastercard's infrastructure, technology, and partnerships to accelerate small businesses digital and sustainable transformations in collaboration with the European entrepreneurial community.

This report is a roadmap for fostering meaningful, scalable impact for small businesses as they navigate the dual challenges of digitalization and sustainability. It emphasizes the outsized role that these businesses must play in tackling the EU's goals of greening and digitalizing the economy, while also acknowledging the obstacles they face in an ever-evolving economic landscape. The findings highlight the immense potential of small businesses as catalysts for broader innovation and economic resilience across Europe.

However, for small businesses to thrive, they need the right support from policymakers, industry leaders, and society at large. Closing the gap between ambition and reality will require accessible finance, a rational regulatory regime, and the essential tools that empower these businesses to lead Europe toward a more prosperous and sustainable future.

Together, we can create an environment that not only sustains but empowers Europe's small businesses to drive innovation, build resilience, and foster a stronger Europe for all.

Mark Barnett
President of Mastercard Europe and Chair of the Mastercard Strive EU Small Business Council

Andrew Cave
Secretary General of the European Small Business Alliance and Mastercard Strive EU Small Business Council Member

Executive summary

Mastercard has long championed micro- and small businesses and their significant contributions to job creation and economic development globally.

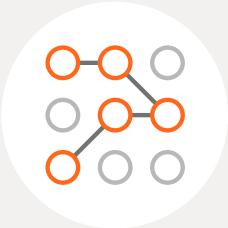
Across the European Union, micro- and small businesses, especially those with fewer than 10 employees, are critical powerhouses. They make up the greatest share of EU enterprises, employ almost one-third of the population, and are performing better than enterprises of other sizes in terms of real value added to the EU economy. Yet these small businesses need support, particularly as the unprecedented challenges in recent years — both geopolitical and macroeconomic — have served to accelerate two structural shifts of significant magnitude: the twin transition toward a digital and sustainable future. Central to the EU's strategy for small businesses and its plans for broader economic recovery, digitalization and sustainability are essential for Europe's competitiveness and prosperity. However, micro-businesses lag behind their larger counterparts on both fronts. Micro-businesses need support navigating the digital and sustainable transition to unleash their full potential to contribute to inclusive growth.

Mastercard has long championed micro- and small businesses and their significant contributions to job creation and economic development globally. This commitment was crystallized in 2021 with the launch of the global Mastercard Strive initiative through the Center for Inclusive Growth. With programs launched in over 35 countries, Mastercard Strive aims to support small businesses by unlocking access to capital, markets, and digital solutions, as well as helping to build their capacity through training and mentoring.

To better identify innovations to accelerate digitalization and sustainability for EU small businesses, the Mastercard Strive EU program looked closer at concerns that hinder micro business progress towards the twin transition, identifying four key takeaways:

Micro-businesses underutilize advanced digital technologies, such as artificial intelligence (AI), to the detriment of efficiency and profitability gains. Current solutions are often ill-matched to micro-businesses' resource constraints, concerns, and needs around AI. Despite this, there are new solutions emerging and EU-level policies that may drive innovation forward, enabling a more level playing field for micro-businesses.

There is a persistent lack of tools and know-how to protect against cybersecurity threats. While digitalization unlocks significant new opportunities for micro-businesses, it also increases their risks to cyberattacks and drives a greater need for tailored solutions. Innovations in cybersecurity technology can bring new opportunities for improved risk management.



Micro-businesses face greater difficulty navigating evolving consumer preferences and regulatory expectations around environmental sustainability. As consumer preferences evolve, and the need to adhere to new regulations increases, micro-businesses are facing pressure to demonstrate their commitments to environmental, social and governance (ESG) goals. Many micro-businesses lack the tools to address these concerns efficiently and are looking for innovative approaches to supply chain monitoring, measurement, and reporting to meet this challenge.

Micro-businesses face persistent, limited and restricted access to working capital and credit. Embedded financial solutions offer significant advances to micro-businesses over traditional financial services (including the use of alternative data sources, market integrations and innovative product types and terms). Advancements in EU regulations are expected to support the expansion of embedded finance, making it more accessible and impactful for micro-businesses.

This report explores the critical role of micro-businesses in driving inclusive growth in the EU, the digitalization and sustainability challenges that EU small businesses face, and the innovation that can support them in overcoming these challenges, unleashing their full potential to contribute to inclusive growth.

To support European small businesses on their journey toward a digital and sustainable future, Mastercard Strive launched a dedicated EU program in 2023, surfacing innovations that improve access to capital, digital capabilities, networks, and essential know-how for micro-businesses across the region. To foster an entrepreneurial ecosystem that supports EU small businesses on their journey to greater digitalization and sustainability, the Mastercard Strive EU program launched an Innovation Fund, awarding grants of up to €500,000 to non and for-profit organizations from 27 EU Member States. Recently, 10 Innovation Fund winners from eight EU Member States were announced. Selected from almost 500 applications, these innovators are developing solutions that address persistent challenges that affect micro-businesses, enabling them to get capital, go digital, grow networks and know-how.

The role of small businesses in driving inclusive growth in the European Union

> *Small businesses are the building blocks of healthy communities … when you have a small business or an entrepreneur you essentially have somebody who sees a problem and finds a solution for it.*

Andrew Cave
Secretary General of the European Small Business Alliance
Mastercard Strive EU Small Business Council Member

Micro-enterprises power the European Union's economy. These are the smallest of firms — with fewer than 10 employees and annual revenue of less than €2 million — with the mightiest presence and impact. There are 24 million of these companies across the EU's 27 Member States. They make up the vast majority of businesses (93.6%) and substantially outnumber their small and medium-sized (SME) counterparts.[1] These companies employ almost one-third of the EU's workforce (almost 41 million people) and deliver €1.8 trillion of wealth (as measured by real value added).[2] They are present across all EU industrial sectors, though they are concentrated in the construction, retail and tourism sectors.[3] Micro-enterprises are deeply ingrained in and integral to livelihoods and communities in the EU.

	SIZE OF BUSINESS (# OF EMPLOYEES)	SHARE OF ENTERPRISES	SHARE OF PEOPLE EMPLOYED	SHARE OF VALUE ADDED
Micro	<10	93.6%	30.0%	19.8%
Small	11 to <50	5.4%	19.7%	16.8%
Medium	51 to <250	0.8%	15.5%	16.6%
Large	>250	0.2%	34.8%	46.9%

FIGURE 1
The economic structure of the EU's enterprises
Data from European Commission, Annual Report on European SMEs 2023/2024.

1 European Commission, Annual Report on European SMEs 2023/2024, 2024.
2 European Commission, Annual Report on European SMEs 2023/2024, 2024.
3 European Commission, Annual Report on European SMEs 2023/2024, 2024.

Small businesses are essential for driving growth that is inclusive

Businesses with fewer than 10 employees are deeply embedded in local communities and provide jobs and vital goods and services. Micro-businesses can bridge the proximity gaps of larger enterprises by serving and offering opportunities to more rural and underserved groups. In the last three years, businesses with fewer than 10 employees have created nearly four million jobs across the EU, significantly more than SMEs.[1] They are also more likely to hire workers from underserved groups, such as those who are younger, older or less skilled.[2]

In the last three years, businesses with fewer than 10 employees have created nearly four million jobs across the EU.

Small businesses are showing their resilience to macroeconomic and geopolitical challenges

The past four years have been challenging for EU businesses of all sizes. While businesses were left reeling from the COVID-19 pandemic and its related restrictions, macroeconomic factors and geopolitical events have impeded their recovery. Inflation and high interest rates, the ongoing energy crisis, and the Russia-Ukraine War and its effects on trade, sanctions, and supply chains are impacting EU businesses' ability to recover and grow.

Small businesses with fewer than 10 employees have "proven their resilience in the face of current challenges"[3] and continue to show their importance to the EU economy. In 2023, they performed better than SMEs in both employment and real value added. Employment in micro-businesses grew by 2.3% in 2023, outpacing all other business sizes.[4] And their decline in inflation-adjusted value added was less pronounced than other business sizes.[5]

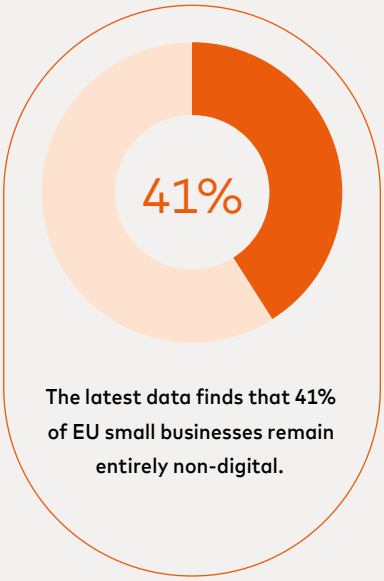
Small businesses lag behind their larger counterparts in transitioning to a digital and sustainable future

The unprecedented challenges of recent years have served to accelerate two structural shifts of significant magnitude: the twin transition toward a digital and sustainable future. These have become central tenets of the EU's SME Strategy and its plans for economic recovery.[6] They are essential for Europe's competitiveness and prosperity, economic and technological sovereignty, and resilience to external shocks.[7]

1 European Commission, Annual Report on European SMEs 2023/2024, 2024.
2 ILO, "The Power of Small: Unlocking the Potential of SMEs," October 2019.
3 European Commission, Annual Report on European SMEs 2023/2024, 2024.
4 European Commission, Annual Report on European SMEs 2023/2024, 2024.
5 European Commission, Annual Report on European SMEs 2023/2024, 2024.
6 European Commission, "SME-friendly business conditions"; European Commission, "The Recovery and Resilience Facility."
7 European Union, An SME Strategy for a sustainable and digital Europe, October 3, 2020.

In recent years, European SMEs have accelerated their digital efforts, where their share of online spending has increased since 2021, most notably in the Travel and Expense and retail sectors.[1] This trend reflects not only their agility in adapting to e-commerce demands but also their ability to meet the preferences of a more digitally engaged consumer base. Despite this growth in online sales, SMEs still face challenges in broader digitalization. While their presence in e-commerce has empowered SMEs to overcome traditional geographic limitations, reach new audiences, and gain a competitive edge within the online economy, their digital capabilities often remain limited to sales channels.

Arguably, these lags are reflected in a decrease in micro-business productivity in the last 20 years. In 2008, micro-businesses were over 55% as productive as larger firms, but that has steadily declined to just 49% in 2024.[2] Incentivizing the uptake of innovative digital tools by EU small businesses is paramount to improve productivity, increase competitiveness, and support small business growth.[3] Innovative solutions enable micro-businesses to improve their access to digital markets and affordable finance, to better engage with their customers, and to improve their compliance with new sustainability standards, directives and regulations.



The latest data finds that 41% of EU small businesses remain entirely non-digital.

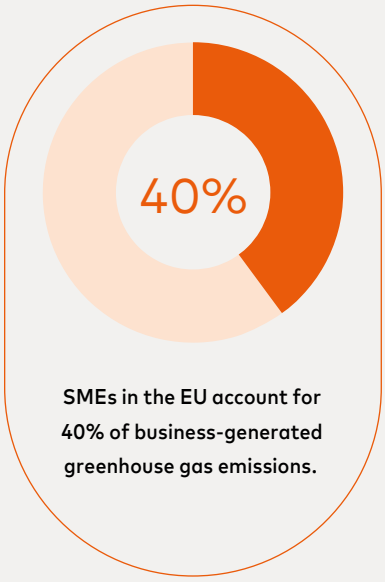
Small businesses lag in digitalization

Despite many businesses being forced to digitalize to remain operational amid COVID-19 measures, digitalization has not been equal across European firms. Just 30% of EU micro-businesses invested in digitalization as a response to the COVID-19 pandemic, compared to 62% of their medium and large counterparts.[4] Small enterprises were more likely to have low or very low levels of digital intensity in 2023.[5] The latest data finds that 41% of EU small businesses remain entirely non-digital.[6]

Digitalization has been slow and uneven across EU Member States; this year, digitalization in the EU grew at just half the rate required to achieve 2030 targets.[7] Countries with faster internet speeds have a greater proportion of digitally enabled firms, and returns from digitalization are greater for firms in these regions.[8] As digitally enabled firms have performed better post-pandemic, this raises concerns about a widening digital divide within the EU.[9]

1 Mastercard Economics Institute, "Did you know? EU small and medium-sized businesses are growing in retail, T&E and online."
2 European Commission, Annual Report on European SMEs 2023/2024, 2024.
3 European Commission, "Second report on the State of the Digital Decade calls for strengthened collective action to propel the EU's digital transformation," July 2, 2024.
4 European Investment Bank, Digitalisation in Europe 2022-2023: Evidence from the EIB Investment Survey, May 15, 2023.
5 Eurostat, "Towards Digital Decade targets for Europe," September 2023.
6 Eurostat, "Towards Digital Decade targets for Europe," September 2023.
7 European Commission, "Second report on the State of the Digital Decade calls for strengthened collective action to propel the EU's digital transformation," July 2, 2024.
8 European Investment Bank, Digitalisation in Europe 2021-2022: Evidence from the EIB Investment Survey, May 5, 2022.
9 European Investment Bank, Digitalisation in Europe 2021-2022: Evidence from the EIB Investment Survey, May 5, 2022.

As micro-businesses start to engage with digital services and opportunities, their digital and data assets increase — however this also increases their vulnerability to cyberattacks. To remain competitive and respond to market pressures to digitalize, micro-businesses need to integrate digital technologies into their operations in ways that protect their cybersecurity and mitigate risks.[1]



SMEs in the EU account for 40% of business-generated greenhouse gas emissions.

Small businesses lag in sustainability

The EU is committed to achieving climate neutrality by 2050.[2] The European Commission has highlighted the need for innovation to minimize the burden that new environmental policies could introduce for small businesses and to support them to positively contribute towards the goals outlined in the European Green Deal.[3]

Small businesses must be central to this commitment, as SMEs in the EU account for 40% of business-generated greenhouse gas emissions.[4] While over half are concerned about climate change, only one-third of small businesses have taken mitigating action.[5] Small businesses are less likely than large businesses to adopt measures that make them more resource-efficient, such as saving energy or switching to more sustainable suppliers and materials.[6] Evolving consumer preferences toward businesses embracing environmentally sustainable practices and greater transparency on environmental impact thus run the risk of affecting micro- and small businesses disproportionately.[7]

Challenges micro-businesses face in becoming more environmentally sustainable include limited resources (both financial and skill-based), adherence to new regulations and consumer demand, and the high cost of investments in new green technologies.[8] Moreover, 36% of surveyed SMEs report that grants or subsidies would most help their company to be more resource efficient, and 31% reported financial incentives for developing products, services or new production processes would be the best type of support to help them launch a range of green products or services.[9]

1 Jarosław Brodny and Magdalena Tutak, Journal of Open Innovation, "Digitalization of Small and Medium-Sized Enterprises and Economic Growth: Evidence for the EU-27 Countries," June 2022; Nadeem Iftikhar and Finn Ebertsen Nordbjerg, Towards Sustainable Customization, "Implementing Machine Learning in Small and Medium-Sized Manufacturing Enterprises," November 2021.
2 European Commission, "Green transition."
3 European Parliament, A Europe Fit for the Digital Age, "Small and medium-sized enterprises (SMEs) strategy," August 20, 2024.
4 OECD, Taking on the transition: Giving centre stage to our cities, regions, small businesses, entrepreneurs and social innovators, 2024.
5 European Investment Bank, Digitalisation in Europe 2022-2023: Evidence from the EIB Investment Survey, May 15, 2023.
6 European Commission, SMEs, resource efficiency and green markets, March 2022.
7 McKinsey & Company, "Consumers care about sustainability — and back it up with their wallets," February 6, 2023.
8 European Commission, Annual Report on European SMEs 2021/2022, "SMEs and environmental sustainability: Background Document," April 2022.
9 European Commission, SMEs, resource efficiency and green markets, March 2022.

Small businesses need support navigating the digital and sustainable transition to unleash their full potential to contribute to inclusive growth

To support micro-businesses in Europe with their journey toward a digital and sustainable future, Mastercard Strive launched a dedicated EU program in 2023, which seeks to boost the resilience and growth of European micro-businesses by surfacing innovations that support them to get capital, go digital, and grow networks and know-how.[1] The Mastercard Strive EU program has identified key concerns that compound the progress of EU micro-businesses toward the twin transition of digitalization and sustainability:

Digitalization concerns:

- **Micro- and small businesses underutilize advanced digital technologies, such as artificial intelligence (AI), to the detriment of their efficiency and profitability gains.** In 2023, just 6.4% of small businesses in the EU used AI technologies. Use by medium and large businesses was more than double and triple this, respectively.[2]
- **Micro- and small businesses often lack the tools and know-how to protect against cybersecurity threats.** Cyberattacks continue to be ranked one of the top five risks likely to present a material crisis on a global scale.[3] Small businesses are less likely to feel informed about cybercrime risks, and the latest data finds that almost one-third (28%) of SMEs in the EU experienced a cybercrime within a 12-month period.[4]

Sustainability concerns:

- **Among other pressing climate concerns, micro- and small businesses have greater difficulty navigating evolving consumer preferences and regulatory expectations around environmental sustainability.** In the EU, small businesses are less likely than large businesses to undertake actions to become resource-efficient.[5] Further, many small business owners are worried about mounting regulatory pressures around environmental sustainability.[6]

1 Mastercard, "Empowering small businesses across Europe to thrive," November 30, 2023.
2 Eurostat, "Use of artificial intelligence in enterprises," May 2024.
3 World Economic Forum, The Global Risks Report 2024, January 10, 2024.
4 European Commission, SMEs and Cybercrime, May 2022.
5 European Commission, SMEs, resource efficiency and green markets, March 2022.
6 Amazon Web Services, "The European Union's New Sustainability Regulations for Small and Medium Businesses: Challenges and Opportunities," December 6, 2022.

Financing and skills gaps:

- **Micro- and small businesses have limited and restricted access to working capital and credit.** Estimates suggest that the annual financing gap for micro- and small businesses in the EU is in the range of €20 to €112 billion per country, which is three to five times larger than that of the United States.[1]
- **Micro- and small businesses lack access to the necessary talent and skills to tackle challenges.** While 95% of small businesses in the EU consider having workers with the right skills important for their business model, 63% report that skills shortages are obstacles to their business activities.[2]

The five concerns outlined above compound the progress of EU micro-businesses toward the twin transition, hindering their resilience and growth potential. Each of these concerns are explored in greater detail in the next section, highlighting particular challenges, and how digital innovation can potentially address these concerns and, in doing so, the expected impact on micro-businesses.

1 IFC, MSME Finance Gap: Assessment of the Shortfalls and Opportunities in Financing Micro, Small, and Medium Enterprises in Emerging Markets, 2017.
2 European Commission, European Year of Skills - Skills shortages, recruitment and retention strategies in small and medium-sized enterprises, September 2023.

Innovation to overcome challenges for EU micro-businesses

To better identify how innovation can accelerate digitalization and sustainability for EU micro-businesses, the Mastercard Strive EU program looked closer at challenges that hinder micro-business progress toward the twin transition. These include an underutilization of AI, a lack of tools and know-how to protect against cybersecurity threats, difficulty navigating evolving consumer preferences and regulatory expectations around environmental sustainability, and persistent limited and restricted access to working capital and credit.

The Mastercard Strive EU program is committed to supporting micro-businesses to overcome these challenges. To drive these efforts, the Mastercard Strive EU program selected 10 Innovation Fund winners developing solutions that enable micro-businesses to harness AI to save time and make money; go digital safely by bolstering cybersecurity; navigate evolving consumer preferences and regulatory expectations around environmental sustainability; and unlock working capital and credit through embedded finance.

Underutilization of artificial intelligence

> *For small businesses, AI offers a powerful means to level the playing field, unlocking access to data-driven insights and automations that were once the sole domain of large corporations. As AI tools become more accessible, small businesses can better understand their customers, streamline operations, and focus on growth. Embracing this technology is no longer just an advantage; it's an opportunity to thrive in an increasingly competitive landscape.*

Hajdi Cenan
CEO, airt | President, Cro Startup
Mastercard Strive EU Small Business Council Member

AI has the potential to fundamentally change how micro-businesses operate

AI is at the forefront of technological innovation, promising to transform how businesses operate, innovate and compete. For micro- and small businesses, AI presents opportunities and significant challenges. The mainstream emergence of generative AI, in particular, has dramatically expanded possibilities. Compared to previous iterations of AI, such as machine learning and deep learning, generative AI has new capabilities

to create unique images and videos from simple inputs, interact with the environment through advanced sound and image recognition, and analyze and revise text, data and code. Crucially, generative AI is often free, available online, and accessible through user-friendly interfaces, without the need for specialized training or external expertise.

Small businesses can use powerful AI tools for content creation, data analysis, customer interaction and process optimization, which has the potential to reshape organizations' resource allocation. In the EU, generative AI is expected to augment 61% of jobs, while partially or fully displacing 7% of jobs.[1] Small businesses stand to gain substantial productivity boosts, especially in knowledge-intensive roles.

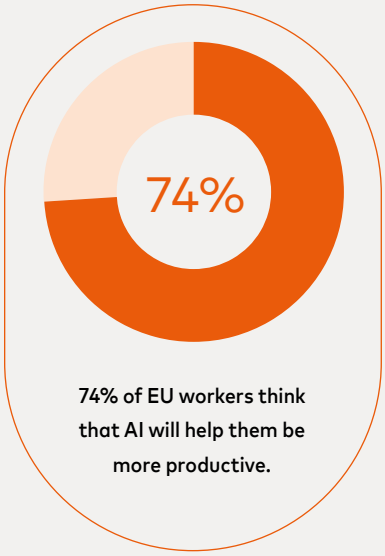
FIGURE 2

AI applications by business domain

Caribou Digital, analysis of 2024 Mastercard Strive Innovation Fund application data.

BUSINESS DOMAIN	AI SOLUTIONS	EXAMPLES
Management and personnel	AI assisted decision-making, real-time automated insights, talen acquisition, employee retention, performance analysis, AI-assisted training and mentoring	AI chatbots, AI for recruitment matching, employmee performance tracking and prediction, retention risk analysis
Marketing, sales, and lead generation	Personalized marketing, AI-driven ad targeting, predictive analytics, lead scoring, pricing optimization	AI-driven ad targeting, content tools, sales forecasting, lead scoring
Operations and supply chain management	Automation, inventory management, supply chain optimization, automated quality assurance, threat detection, vulnerability assessment	Inventory automation, demand forecasting, supply chain management, AI to detect security breaches, analyze potential vulnerabilities
Finance and accounting	Financial forecasting, automated bookkeeping and cash flow management, compliance, fraud detection, expense management, investment opportunities analysis	Cash flow prediction, automated invoice processing, anomaly detection
Customer engagement and support	AI chatbots, sentiment analysis, automated responses, AI-assisted ticket resolution	AI chatbots, sentiment analysis tools, automatic ticket categorization, AI to assist customer support agents
Product development and innovation	AI-driven product design, prototyping, user feedback analysis	Tools for rapid prototyping, AI-based user feedback analysis
Market research and trend analysis	AI for market sizing and trends, customer insights, competitive analysis	Tools for analyzing market trends, customer insights, competitive intelligence

1 Implementing Consulting Group, The economic opportunity of AI in the EU, September 2024.



74% of EU workers think that AI will help them be more productive.

Productivity gains are a consistent theme in the emerging evidence on the impact of AI on firm and work outcomes.[1] In customer-facing businesses, workers are using AI to resolve issues faster and improve customer satisfaction.[2] Similar gains appear in coding and knowledge work tasks.[3] Polling shows that 74% of EU workers think that AI will help them be more productive.[4]

Despite these benefits, challenges persist, especially for less digitally savvy businesses. AI has significant potential to widen the digital divide — the disparity in ICT-based productivity gains — among small businesses with lower digital maturity levels that may struggle to adopt these technologies.[5] A recent Public First poll revealed that just 58% of SMEs in the EU plan to invest in AI-based automation in the next five years, compared to 88% of large companies.[6]

Current AI challenges stem from resource constraints, hesitancy, and unmet needs

Although easier than before, implementing comprehensive AI solutions can still require significant investment in technology and skilled staff. This creates a barrier for micro-businesses operating on limited resources. Technical complexity may also continue to be an issue. While many commercial AI solutions are user-friendly, companies looking to modify or tailor these solutions, or develop their own, require specialized skill sets.[7] The micro-business digital maturity gap exacerbates these challenges. A significant portion of micro-businesses lack the foundational digital skills to make the most of AI-driven tools and processes. This creates a divided landscape where digitally advanced firms pull ahead and others risk falling behind.[8] Studies estimate the number of small businesses using AI in core products and services to be as much as 26% of small businesses across the OECD[9] to as few as 6% of EU small businesses.[10] EU statistics suggest that medium and large enterprises are using AI at two to five times the rate of small businesses.[11]

1 Davis, "Artificial Intelligence and Worker Power," June 2024.
2 National Bureau of Economic Research, NBER Working Paper 31161, "Generative AI At Work," April 2024.
3 Noy and Zhang, Science, "Experimental evidence on the productivity effects of generative artificial intelligence," July 14, 2023; Campero et al., MIT Center for Collective Intelligence Working Paper No. 2022-001 "A Test for Evaluating Performance in Human-Computer Systems," June 28, 2022.
4 Implementing Consulting Group, The economic opportunity of AI in the EU, September 2024.
5 OECD, SME and Entrepreneurship Papers, No. 62, "SME Digitalisation to manage shocks and transitions: 2024 OECD D4SME survey," September 16, 2024.
6 Implementing Consulting Group, The economic opportunity of AI in the EU, September 2024.
7 OECD, SME and Entrepreneurship Papers, No. 62, "SME Digitalisation to manage shocks and transitions: 2024 OECD D4SME survey," September 16, 2024.
8 Ibid.
9 A majority (80%) of the surveyed sample had fewer than 10 employees. The survey included the following EU Member States: France, Germany, Italy and Spain.
10 Eurostat, "Use of artificial intelligence in enterprises," May 2024. Note: The Eurostat figures for "small business" refers to businesses with 10 to 49 employees. Data for enterprises with fewer than 10 employees is not available in the dataset. It is reasonable to assume that AI adoption rates for these smaller firms is lower, given trends in technology adoption across business sizes.
11 Eurostat, "Use of artificial intelligence in enterprises," May 2024. Note: The Eurostat figures for "small business" refers to businesses with 10 to 49 employees. Data for enterprises with fewer than 10 employees is not available in the dataset. It is reasonable to assume that AI adoption rates for these smaller firms is lower, given trends in technology adoption across business sizes.

Small business attitudes towards AI also vary widely. Many recognize its potential to boost productivity and innovation, and see AI as a tool to enhance efficiency, enable creativity, and improve customer engagement. Yet concerns persist, including the potential for misinformation, loss of control over decision-making, and issues surrounding intellectual property and privacy. Regulatory uncertainty is another concern; some businesses hesitate to invest without clear and established guidelines.[1] Nearly half of EU companies considering adopting AI cite the lack of clarity about legal consequences as a barrier.[2]

Current solutions often fall short in providing comprehensive support at affordable pricing. Small businesses need more than just AI technology; they need guidance on implementation, best practices, and on data use and other legal and ethical considerations. The "black box" nature of some AI systems creates additional uncertainty, highlighting the need for more transparent and explainable AI solutions.

The "black box" nature of some AI systems creates additional uncertainty, highlighting the need for more transparent and explainable AI solutions.

Acquiring expertise, information processing, and customer communications may be the low hanging fruit of generative AI

Generative AI shows potential as a "virtual expert" to revolutionize knowledge management[3] and is currently being developed by organizations, including Mastercard, to support micro-businesses to grow and thrive.[4] This could be particularly valuable for micro-businesses lacking extensive internal resources. In customer operations, generative AI shows can improve service quality and agent productivity by improving issue resolution and reduced handling times.[5] These benefits can level the playing field for micro-businesses with less experienced staff. In marketing and sales, generative AI can personalize communications and enable content creation. However, micro-businesses developing or deploying AI need safeguards against ethical concerns and legal uncertainties. AI solutions will need to balance automation with an appropriate degree of human oversight.[6]

1 OECD, SME and Entrepreneurship Papers, No. 62, "SME Digitalisation to manage shocks and transitions: 2024 OECD D4SME survey," September 16, 2024.
2 European Commission, Discussion Paper 210, "Artificial Intelligence: Economic Impact, Opportunities, Challenges, Implications for Policy," July 31, 2024.
3 McKinsey & Company, The economic potential of generative AI: The next productivity frontier, June 2023.
4 Mastercard, 2024. Mastercard Announces Development of Inclusive AI Tool to Provide Personalized, Real-Time Assistance to Small Business Community.
5 McKinsey & Company, The economic potential of generative AI: The next productivity frontier, June 2023.
6 McKinsey & Company, The economic potential of generative AI: The next productivity frontier, June 2023.

AI solutions need to address micro-businesses' ethical concerns and legal uncertainties

Potential bias, intellectual property, and data privacy and protection are key ethical considerations for micro-businesses on AI:

- **Bias and fairness:** A micro-firm using AI to develop innovative products to streamline efficiency in healthcare management needs to make sure the system does not perpetuate or amplify existing biases. This requires ongoing monitoring and audits of AI outputs, potentially reducing the efficiency gains that integrating AI was meant to produce.[1]
- **Intellectual property:** A local gift shop owner using generative AI tools needs to be aware of potential copyright issues and understand the circumstances under which they have the right to use and sell AI-generated designs.[2]
- **Privacy:** A micro-fintech firm rolls out an AI-powered office software suite for its employees. The AI features rely on constant monitoring of employee devices and provide management with the ability to quickly access employees' activities. Management will need to agree on and communicate new privacy policies to employees to protect both employees and their customers.
- **Data protection:** Small firms in the tourism sector using AI for customer segmentation must ensure they are collecting and processing data securely and in compliance with GDPR. This could require investment in more secure data infrastructure and staff training which may strain resources.

Policy initiatives are emerging to address these issues. The EU AI Act consists of regulations for safe, transparent, and ethical AI development and use.[3] The bill came into force in August 2024. The first set of obligations, for prohibited systems and general-purpose models, take effect from 2025 and obligations for high-risk applications such as vocational training, employment (e.g., resume scanning), and workplace management come into effect in 2026.

The AI Act may enhance trust by setting standards for transparency and safety in AI deployment but it is set to cost micro-businesses: according to the European Commission's initial assessment, businesses with 10 employees could face compliance costs of up to €200,000, on top of costs associated with developing and marketing an AI solution.[4] Compliance costs are likely to be higher still for AI developers building and developing general-purpose models, which may translate into higher prices for deployers and end users.

1 Upwork, "6 Ethical Considerations of Artificial Intelligence," August 22, 2024; Alan Turing Institute, The AI Revolution: Opportunities and Challenges for the Finance Sector.
2 ICS, "Why Small Businesses Need to Be Careful with AI."
3 European Parliament, EU AI Act: first regulation on artificial intelligence, July 6, 2023.
4 European Commission, Study supporting the impact assessment of the AI regulation, April 2021.

Aware of the challenges micro-businesses face in adopting AI, the Mastercard Strive EU Innovation Fund promotes the development of digital solutions that equip micro-businesses with tailored, responsible and affordable AI tools.

Innovation in AI development and its applications may suffer as regions with no or lower regulation draw ahead. AI providers may disable or restrict certain features in the European market, resulting in less capable and customized products. In 2024, AI developers such as X, Meta, and Google, announced they were delaying or withholding AI products to the EU, citing regulatory uncertainty.[1] This led many European CEOs to sign a letter calling for a more predictable regulatory environment.[2]

If the EU's legislative landscape creates an overly bureaucratic and restrictive environment, there is a risk of reduced uptake, investment, and talent flight with innovators moving to less regulated markets.[3] A recent European Commission report on competitiveness reveals that only 6% of global AI funding goes to the EU (compared to 61% for the US) and that many micro-businesses developing AI choose to relocate.[4]

The Mastercard Strive EU program as an enabler of a more level AI playing field

Aware of the challenges micro-businesses face in adopting AI, the Mastercard Strive EU Innovation Fund promotes the development of digital solutions that equip micro-businesses with tailored, responsible and affordable AI tools.

The Mastercard Strive EU Innovation Fund will support three organizations to develop AI solutions tailored for micro-businesses: Direct Market, It Goes Forward, and IVÆKST. Winners will create user-centric tools to provide market access, optimize operations and increase efficiency, eventually driving revenue growth. They aim to make AI and data-driven processes accessible by automation, efficiency gains and the simplification of complex tasks. The solutions meet different micro-business needs:

- A digital marketplace that will use AI to match producers with retail buyers, optimizing supply chains and increasing profitability for micro-agribusinesses (Direct Market)
- A return management system that uses data analytics and automation to reduce costs and environmental impact for e-commerce businesses (It Goes Forward)
- A one-stop-shop platform to assess micro-businesses' needs and provide tailored guidance on AI adoption and cybersecurity (IVÆKST)

1 Politico, "Google hit with European privacy probe over its AI system," September 12, 2024.
2 EU Needs AI, "Open Letter: Europe needs regulatory certainty on AI."
3 Roland Berger, "European AI Act: Opportunities and challenges," May 8, 2024.
4 European Commission, The future of European competitiveness, "Part B: In-depth analysis and recommendations," September 2024.

Lack of tools and know-how to protect against cybersecurity threats

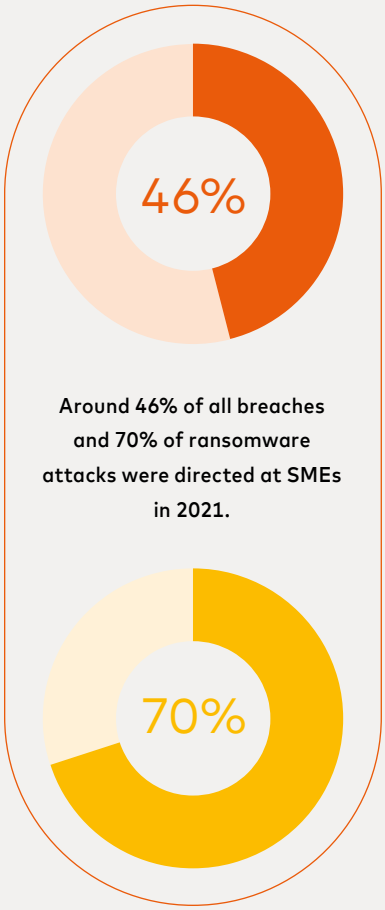
> *Cybersecurity is a critical component of setting up and running a business. Too often it is only considered after a small business is impacted by a cyber attack. Small businesses need to realise they are at risk and know there are tools, resources, and support they can use to help prevent the majority of the most common ones.*

Gill Thomas
Director of Engagement, Global Cyber Alliance
Mastercard Strive EU Small Business Council Member

Digitalization unlocks opportunities for micro-businesses to strengthen cybersecurity

As micro- and small businesses embrace digital solutions — including remote work and cloud services — and grow their digital and data assets, they increase their exposure to cybersecurity and data protection risks. Cybersecurity concerns are frequently cited by small and medium-sized business owners as a barrier to prioritizing digitalization, with 28% stating that it is a major or severe obstacle.[1] Globally, an estimated 87% of small businesses store customer data,[2] and ransomware — one of the biggest cyberthreats in the EU — sees more than 10 terabytes of data stolen monthly.[3] Other malware, distributed denial-of-service (DDoS) attacks and data breaches are the three most common types of attacks faced by European SMEs.[4]

Small businesses are deliberately targeted in cyberattacks. While there is limited data on the cybersecurity of companies with fewer than 10 employees, 90% of breaches worldwide occur within small businesses, and the number of attacks is constantly rising.[5] At the same time, just 14% of SMEs globally are prepared for a potential cyberattack.[6] Further, cybercrime is becoming more pervasive and complex. Around 46% of all breaches and 70% of ransomware attacks were directed at SMEs in 2021, and around 61% of SMEs fell victim to a cyberattack that year.[7] One in 10 SMEs will become a target of a cyberattack in the next two years.[8]



Around 46% of all breaches and 70% of ransomware attacks were directed at SMEs in 2021.

1 British Business Bank, European SME Survey 2019, Going Digital: The Challenges Facing European SMEs, 2019.
2 Astra, "51 Small Business Cyber Attack Statistics 2024 (And What You Can Do About Them)," August 17, 2024.
3 EU Agency for Cybersecurity, ENISA Threat Landscape 2022, November 3, 2022.
4 European Economic and Social Committee, Cybersecurity: Ensuring awareness and resilience of the private sector across Europe in face of mounting cyber risks, March 2018.
5 StationX, "+50 Cyber Attacks on Small Businesses Statistics," April 10, 2024.
6 Astra, "51 Small Business Cyber Attack Statistics 2024 (And What You Can Do About Them)," August 17, 2024.
7 StrongDM, "35 Alarming Small Business Cybersecurity Statistics for 2024," February 1, 2024.
8 GWorld Economic Forum, Global Risks Report 2022, January 2022.

Cyberattacks can cause significant reputational damage and financial losses to micro-businesses, such as ransom payments, revenues lost to business downtime, remediation, legal costs, fines, and audit fees if businesses are not protected by products like cyber insurance. In some cases, the financial repercussions may be beyond the average micro-enterprise's available cash reserves and cause reputational damage that could be difficult to remediate. Globally, around 60% of small companies go out of business within six months of a cyberattack, illustrating their severity.[1] In other cases, small businesses may pass these costs to the consumer; an estimated 60% of businesses that have experienced data breaches subsequently raised prices.[2] This can limit a company's ability to maintain its competitiveness and market position.

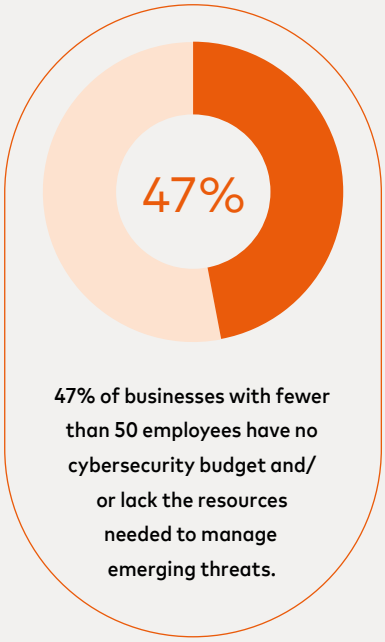
Beyond cybersecurity mitigation, micro-businesses must navigate privacy regulations like the General Data Protection Regulation (GDPR).[3] Small businesses face serious financial and reputational repercussions for failure to comply with GDPR.[4] Particularly in business-to-business (B2B) supply chains, micro-businesses may no longer qualify for contracts unless they demonstrate compliance with new standards. While there are EU and national initiatives to support small businesses to meet new standards,[5] they still lack the resources to adequately meet all needs.

Small businesses lack the resources to adequately manage cybersecurity risks

Despite increasing risks, micro-businesses may not prioritize robust cybersecurity measures or invest in advanced protection tools, leaving them vulnerable to attacks.

Many micro-business owners and staff lack awareness or underestimate the risks associated with digitalization. Users are weak points in IT systems, and simple errors can increase exposure to cyber risks. Cybersecurity can be a low priority and is often only addressed after a concrete threat has emerged. Small business owners may believe that their businesses are too micro-to be targeted by cyberattacks, leading to a lack of proactive measures. Fewer than 15% of small businesses develop explicit cybersecurity strategies or tools to combat phishing and ransomware, the most common types of business cyberattacks.[6]

1 Cybercrime Magazine, "60 Percent of Small Companies Close within 6 Months of Being Hacked," January 2, 2019.
2 Beyond Identity, "10 Statistics that Show the Cost of a Data Breach to Companies," September 21, 2022.
3 European Council, "The general data protection regulation," June 13, 2024.
4 IBM, Cost of a Data Breach Report 2024, 2024.
5 European Data Protection Board, "EDPB Launches Data Protection Guide for small business," April 27, 2023.
6 Astra, "51 Small Business Cyber Attack Statistics 2024 (And What You Can Do About Them)," August 17, 2024.



47% of businesses with fewer than 50 employees have no cybersecurity budget and/ or lack the resources needed to manage emerging threats.

Small business owners often do not know how to best manage the risks of digitalization, identify appropriate systems to protect assets, and build capacity. Education and awareness programs have potential, but they are often targeted to larger organizations or are financially impractical. External expertise and consultation, or opportunities to improve understanding through simulations or demonstrations, are limited or too expensive. Forty-seven percent of businesses with fewer than 50 employees have no cybersecurity budget and/or lack the resources needed to maintain, update and adapt systems/solutions to emerging threats.[1]

Despite the lack of cybersecurity management, consumers are increasingly concerned about businesses' practices and standards to protect their data from security breaches and unauthorized use. Privacy concerns stem from fears that personal information may be collected, shared or sold without consent, or stolen or compromised. Unauthorized use of data, including identity theft and fraud, also raises significant concerns. An estimated 46% of data breaches involve customers' personal identifiable information, which has significant impacts on customer confidence.[2]

Cybersecurity solutions can increase micro-business risks if not managed effectively

Cybersecurity solutions are not without risks for micro-businesses. Solutions may encounter technical issues, security flaws or loopholes that have not yet been addressed, especially as they are being tested and as new threats emerge. This can leave micro-businesses exposed even when they believe they have taken steps to manage vulnerabilities. Ensuring that cybersecurity solutions work reliably and can be maintained at an affordable cost, while keeping pace with emerging threats, is critical.

These risks present an emerging opportunity to link cybersecurity solutions with embedded insurance. Cyber insurance — protecting businesses from financial losses resulting from cyberattacks, data breaches and other incidents — can help cover costs related to fines, data recovery, legal fees and loss of business due to downtime. While nascent for SMEs, and even less prevalent among businesses with fewer than 10 employees, cyber insurance has been found to both shield businesses from the impacts of cyberattacks and incentivize better cybersecurity.[3] Further innovation to embed cyber insurance within security solutions will enhance micro-businesses' ability to seamlessly access a more diverse range of cybersecurity solutions.

1 SecureWorld, "The Alarming Cybersecurity Risks Facing SMBs," May 9, 2024.
2 IBM, Cost of a Data Breach Report 2024, 2024.
3 Adriko and Nurse, Information and Computer Security, "Cybersecurity, cyber insurance and small-to-medium-sized enterprises: a systematic review," June 25, 2024.

Innovation can make existing cybersecurity solutions more affordable and user friendly for micro-businesses

Current cybersecurity solutions do not meet micro-businesses' needs.

- **Implementation support and capacity building are insufficient.** As a result, micro-business owners struggle to assess relevant risks, identify relevant solutions, and recognize potential gains from investment. Small businesses need solutions that bundle support and skills-building to address their unique capacity and circumstances.
- **Solutions can be fragmented, with limited options to integrate different services.** Comprehensive, tailored cybersecurity solutions are expensive investments often managed and maintained in-house. Larger businesses have IT teams to manage and maintain them. More affordable off-the-shelf cybersecurity solutions typically address the needs of medium or larger businesses and cannot be tailored to the needs of smaller businesses.
- **Pricing can be prohibitive**. Both cybersecurity and data protection solutions require upfront investments for hardware and software, in addition to continuous licensing fees. More advanced solutions also require consultancy fees and resources for maintenance and management.

Innovative cybersecurity solutions need to be designed to support micro-businesses by offering one-stop, automated cybersecurity that includes data protection. Adequate solutions need to be affordable and modular. With off-the-shelf options, solutions should simplify cybersecurity management and focus on capacity building and staff training. Businesses also benefit from cybersecurity audits by ethical hackers, with consultations specifically tailored for micro-businesses.

Cybersecurity solutions support resilient micro-businesses through improved risk management and greater efficiency

Cybersecurity and data protection solutions can improve micro-businesses' ability to mitigate and manage cyber risks, as well as increase capacity to recover from cyberattacks. This cyber resilience is the foundation for all future business outcomes.

In the short term, micro-businesses that are cyber resilient have improved risk management and efficiency. Innovative solutions tackle the resource and capability gaps by creating user-friendly one-size-fits-all solutions or facilitating access to cybersecurity experts who can provide cost-efficient tailored advice and solutions. This allows micro-businesses to keep up with complex regulations and take a proactive approach to data protection.

As cybersecurity solutions are implemented, micro-businesses can realize multiple benefits. With access to new solutions and capacities, micro-businesses become more confident through increased knowledge of threats, risks and mitigation options. With improved risk management practices, they reduce their exposure to cybersecurity risks and improve their ability to recover from cyberattacks. Over time, this enhanced cyber resilience can improve competitiveness and customer retention and acquisition. In the long term, enhanced cyber resilience supports micro-businesses' financial resilience, as firms are less exposed to financial shocks related to cyberattacks and over time increase their ability to grow and survive.

The Mastercard Strive EU program is an incubator for cybersecurity solutions

Cybersecurity solutions are crucial for micro-businesses, but they can be risky to develop and trial. The Mastercard Strive EU program is committed to supporting innovative, impactful tools that are tailored, effective and affordable. By creating space for winners to experiment and pilot their solutions, the Innovation Fund aims to increase the availability of tools on the market that support cyber resilience in the EU.

The Mastercard Strive EU Innovation Fund will support three organizations to develop cybersecurity solutions for micro-businesses: Cresco Security, Redamp Security S.R.O and Lupasafe. These organizations are developing user-friendly tools to identify security vulnerabilities and take action to mitigate the risks of cyberattacks. All three concepts aim to make cybersecurity accessible by automating processes, reducing costs, and simplifying complex tasks for micro-businesses, thus closing the knowledge and resource gaps that often keep micro-businesses from using cybersecurity solutions. The solutions being funded meet different micro-business needs, ranging from:

- Continuous monitoring, low-touch, day-to-day risk monitoring to ensure compliance with the EU Network and Information Security Directive 2 (Lupasafe)
- Proactive defense through penetration testing and ethical hacking to strengthen security (Cresco)
- A one-stop shop for monitoring cybersecurity issues and recommending relevant solutions to address risks across multiple devices and platforms (Redamp Security S.R.O)

Difficulty navigating evolving consumer preferences and regulatory expectations around environmental sustainability

> *Small businesses can disrupt and be a positive influence in the ESG [environmental, social and governance] area.*

Derek Corcoran
COO, OKX
Mastercard Strive EU Small Business Council Member

Small businesses must address environmental concerns to remain competitive and support Europe's transition to a sustainable future

Small businesses in the EU account for 40% of business-generated greenhouse gas emissions.[1] From production practices, waste management, and packaging to transportation, energy, water efficiency, and more, micro- and small businesses have a significant role to play in supporting the new EU Green Deal and shaping an equitable and net-zero future for the EU. While more than half are concerned about climate change,[2] only one-third have taken mitigating action.[3] For many micro-businesses, it is challenging to assess their impact on sustainability and to identify actions to reduce their environmental footprint.

Consumer and regulatory pressures are growing for companies to demonstrate their commitment to ESG goals. Though ESG reporting was once voluntary, it has become a critical element for companies seeking investment, brand reputation and long-term business sustainability. Yet for micro-businesses meeting these wide-ranging demands is a significant challenge.

In 2023, the EU established the Corporate Sustainability Reporting Directive (CSRD),[4] which requires European businesses to disclose their environmental, social and corporate governance efforts and initiatives.[5] In 2024, the Directive on Corporate Sustainability Due Diligence (CSDDD) entered into force; it requires EU businesses to identify and address adverse human rights and environmental impacts of their actions inside and outside Europe.[6] While SMEs are currently not subject

1 OECD, "Centre for Entrepreneurship, SMEs, Regions and Cities."
2 European Investment Bank, What drives firms' investment in climate action: Evidence from the 2022-2023 EIB Investment Survey, June 14, 2023.
3 European Investment Bank, What drives firms' investment in climate action: Evidence from the 2022-2023 EIB Investment Survey, June 14, 2023.
4 European Commission, "Corporate sustainability reporting," 2023.
5 Amazon Web Services, "The European Union's New Sustainability Regulations for Small and Medium Businesses: Challenges and Opportunities," December 6, 2022.
6 European Commission, "Corporate sustainability due diligence," July 2024.

to CSRD and CSDDD regulations, larger enterprises that must comply will likely require data from the micro- and small businesses they work with. Small businesses that start early in their ESG compliance journey reduce their risk of losing business due to reporting pressure from their large clients and partners. Micro-businesses are increasingly worried about these mounting regulatory pressures[1] and what they mean for their supply chains. Reporting on and disclosing sustainability aspects can be a key source of competitive advantage for retaining larger business customers.[2]

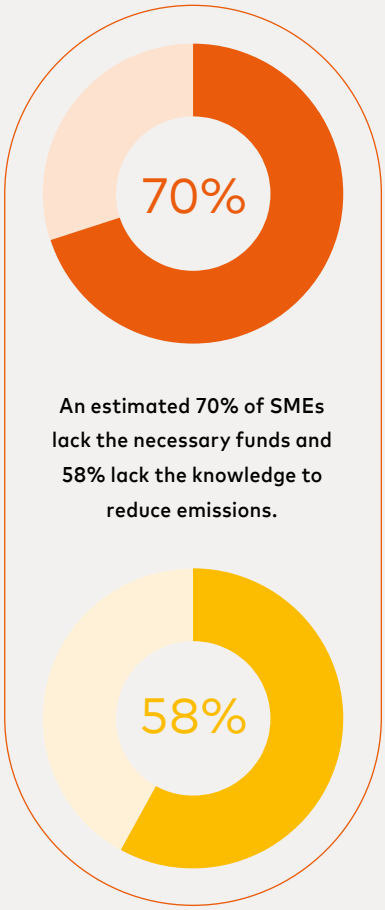
Customer preferences related to sustainability are also evolving, with spending shifting heavily toward companies that prioritize environmentally sustainable packaging and business practices, greater transparency on environmental impact, and commitment to social responsibility.[3] Companies that uphold these values are seizing advantages from those that have not sufficiently invested in sustainable practices. Opportunities emerging from the green transition are projected to reach an annual value of €10 trillion by 2030.[4] It's vital that small businesses adapt their practices to seize these opportunities and attract new customers who are increasingly driven by sustainability concerns.[5]

Small businesses seeking financing (to support their transition to more sustainable practices) may also find that financial institutions are requiring clearer sustainability management plans, goals and even certifications in their decision-making processes.[6] While this may primarily affect businesses already on the path to sustainability, it is another signal that micro-businesses need to formalize their sustainability practices and their ability to measure and report on ESG efforts.

Small businesses lack the resources and capacity to address ESG challenges efficiently

In 2023, investment in climate change measures by European firms reached a new high, with 53% reporting they had made such investment.[7] However, investment is estimated to be significantly lower among businesses with fewer than 10 employees. These enterprises rarely have dedicated staff for sustainability, often lack targeted management tools and infrastructure for ESG data measurement, and may have limited capacity for understanding ESG frameworks.

1 Amazon Web Services, "The European Union's New Sustainability Regulations for Small and Medium Businesses: Challenges and Opportunities," December 6, 2022.
2 T. M. Sohns et al., Journal of Cleaner Production, "Green business process management for business sustainability: A case study of manufacturing small and medium-sized enterprises (SMEs) from Germany," 2023.
3 McKinsey & Company, "Consumers care about sustainability — and back it up with their wallets," February 6, 2023.
4 Amazon Web Services, "The European Union's New Sustainability Regulations for Small and Medium Businesses: Challenges and Opportunities," December 6, 2022.
5 T. M. Sohns et al., Journal of Cleaner Production, "Green business process management for business sustainability: A case study of manufacturing small and medium-sized enterprises (SMEs) from Germany," 2023.
6 Smart Data Foundry and Bankers for Net Zero, Scoping exercise: The role of banks in reducing GHG emissions of UK SMEs, September 2022.
7 European Investment Bank, What drives firms' investment in climate action: Evidence from the 2022-2023 EIB Investment Survey, June 14, 2023.



An estimated 70% of SMEs lack the necessary funds and 58% lack the knowledge to reduce emissions.

Business processes aiming to support sustainability are often lacking.[1] An estimated 70% of SMEs lack the necessary funds and 58% lack the knowledge to reduce emissions,[2] and they are unable to hire or contract consultants to solve sustainability challenges for them.

Complying with sustainability reporting requirements demands comprehensive data on environmental impacts, social practices and governance structures, which requires advanced data collection, storage and interpretation capabilities. Many micro-businesses are not yet equipped to make ESG disclosures or attain green business certifications. From choosing the "right" certification to going through the assessment, documentation and auditing processes, micro-businesses often struggle to find the time and resources to follow through.

Existing ESG solutions are cumbersome, expensive and inefficient for micro-businesses

Small businesses often face a significant information gap regarding available ESG-linked solutions and the best paths to pursue. There are no universally agreed upon criteria for what constitutes a "green-certified" product or service.[3] As a result, both businesses and customers are left to do their own research on which solutions to trust. There is also no central marketplace of ESG solutions, which could enable micro-businesses to assess different ESG options and select the appropriate ones for their needs. This lack of information costs micro-businesses time and money while they search for best-fit solutions.

Current options — ranging from off-the-shelf sustainability reporting platforms to consultancy services — are ill-suited to the budgets and needs of micro-businesses. Automated, "one-size-fits-all" solutions are expensive and often target much larger businesses. They typically use sector-based environmental assessments, which can be misleading, as current technologies often lack the capability to make sophisticated, context-specific decisions that require human discretion.[4] Environmental impacts can vary significantly within a single sector, and automated solutions are rarely tailored to that nuance. More customized solutions may require significant time and effort investment from micro-businesses to complete complex carbon calculators and questionnaires, often with little or no marginal gain compared to off-the-shelf options.

1 T. M. Sohns et al., Journal of Cleaner Production, "Green business process management for business sustainability: A case study of manufacturing small and medium-sized enterprises (SMEs) from Germany," 2023.
2 Results include businesses with up to 500 employees; however, 66% of respondents were from companies with fewer than 25. SME Climate Hub, "Small businesses want to help tackle the climate crisis but lack finance and knowledge, new survey finds," February 14, 2023.
3 Forbes, "What Does a Sustainability Certificate Really Mean?" December 8, 2023.
4 Zoe Nay, Anna Huggins, Felicity Deane, Law, Technology and Humans, "Automated Decision-Making and Environmental Impact Assessments: Decisions, Data Analysis and Predictions," 2021.

When small businesses do report on environmental impacts, the reliability of their data is often questionable due to the heterogeneity of methods used.[1] It is rarely externally verified, usually based on sector-specific benchmarks, and is difficult to validate in practice. This also makes the current solutions difficult for banks supporting small businesses to validate and use in their own decision-making processes.[2]

Innovation can make ESG reporting more reliable and efficient for micro-businesses

Despite the limitations of many of the current solutions on the market, new innovative solutions are emerging to tackle the sustainability transition and appeal to sustainability-concerned consumers. These include:

- **AI and the use of predictive analytics for real-time ESG insights/ dashboards:** Improved monitoring of process inputs, energy consumption, and other major ESG indicators enables businesses to make data-informed decisions for sustainability management. Data extraction, storage and reporting can be streamlined for efficiency.
- **Technology solutions for efficiency, mitigation and waste reduction:** Advancements in Internet of Things–based sensors for continuous monitoring reduce the costs and complexity of in situ data collection on energy use, waste management and carbon emissions. These solutions are most commonly found in agriculture and food production, food services, retail, manufacturing, and construction and transportation. Real-time data enhances ESG accuracy and reliability, making reporting more efficient.
- **Automated ESG compliance solutions** harness advancements made in AI and process and production monitoring, making compliance with green certification more streamlined and efficient.
- **Intuitive, user-friendly interfaces** empower non-specialist users to engage with sustainability initiatives.
- **Collaborative compliance solutions** foster discussion within the micro-business community, to share knowledge, exchange best practices, and resolve compliance challenges.

1 Smart Data Foundry and Bankers for Net Zero, Scoping exercise: The role of banks in reducing GHG emissions of UK SMEs, September 2022.
2 Smart Data Foundry and Bankers for Net Zero, Scoping exercise: The role of banks in reducing GHG emissions of UK SMEs, September 2022.

Enabling small businesses to better understand their ESG impact[1]

Countries across the globe require major buying organizations to mandate their small business suppliers to measure and report on their ESG impact.[2] Despite this growing demand, current ESG and sustainability data solutions are often inaccessible, expensive and do not cater to small businesses' unique needs. To address this, Mastercard Strive has partnered with impact assessment platform Vested Impact to provide micro- and small businesses across the globe with independent, affordable and data-driven impact assessments.[3]

Through Vested Impact's platform, small businesses can leverage more than 300 million science-based research papers and impact data points to assess the impact of their products and services on global priorities like climate, education, healthcare and the economy. Small businesses will gain access to an AI-powered comprehensive summary, offering a breakdown of complex ESG data that aligns with leading regulations and supply chain requirements. This data has the potential to improve small businesses' market access and empower them with the data they need to become sustainable and impactful.

1 Adapted from Mastercard Strive, "Toward a green economy: Enabling small businesses to become more sustainable and resilient through digital solutions," August 15, 2024.
2 BDC, "Small businesses left out of big contracts without ESG reporting," March 30, 2023.
3 Mastercard Strive, "Vested Impact: empowering small businesses with the data they need to make change."

Sustainability solutions for micro-businesses will impact wider EU green transition objectives and micro-business competitiveness

Visible and credible ESG engagement can lead to tangible benefits for micro-businesses. Micro-businesses will have increased compliance capacity and reduced reporting burden. They will have more robust data on their environmental performance which can also help unlock new (green) transformation finance for small businesses.[1] Both of these outcomes can lead to micro-businesses becoming more efficient — saving time and money — by optimizing energy consumption, minimizing waste production, and using streamlined tools for reporting on regulatory requirements.

It can also lead to increased customer and supplier acquisition and satisfaction. As customers increasingly shift their spending towards products and services with ESG-related claims, and value chain actors audit suppliers' ESG reporting, companies that have participated in sustainability initiatives become more attractive, and thus more likely to acquire and retain customers.[2] Ultimately these improvements in market share and efficiency are expected to make micro-businesses more financially resilient (as they have better and more flexible access to capital) and grow their revenues.

ESG and environmental sustainability solutions can lead to a more positive environmental impact from micro-businesses. As companies make changes to their own business operations they will reduce their carbon and water-use footprints, improve the life cycle of their products, and manage their businesses in more environmentally sustainable, resource-conserving ways.

The Mastercard Strive EU program is piloting innovative approaches to support micro-businesses' sustainability transition

Sustainability-focused solutions for micro-businesses funded under the Mastercard Strive EU Innovation Fund combine elements of AI and data analytics, process automation, user-centric design, and identification of appropriate tools for compliance, risk and supply chain assessments.

The Innovation Fund will support two organizations to develop ESG reporting solutions for micro-businesses: Planethon and *tilt*. Working with banks and financial institutions, winners will create user-friendly, data-driven tools that not only support micro-businesses with ESG reporting and compliance but also their long-term sustainability goals. These solutions meet different micro-business needs:

1 Smart Data Foundry and Bankers for Net Zero, Scoping exercise: The role of banks in reducing GHG emissions of UK SMEs, September 2022.

2 Cantele and Zardini, Corporate Social Responsibility and Environmental Management, "What drives small and medium enterprises towards sustainability?," May 30, 2019; Hrovatin et al., Journal of Cleaner Production, "How important are perceived barriers and drivers versus other contextual factors for the adoption of energy efficiency measures," 2021; T. M. Sohns et al., Journal of Cleaner Production, "Green business process management for business sustainability," 2023.

- Access to (green) working capital, which will primarily enable micro-businesses to remain competitive with larger firms and make changes to their businesses that will enable further sustainability (tilt).
- Increasing micro-business compliance and reporting to help micro-businesses remain competitive and set themselves apart from others. It will also enable them to address sustainability issues more efficiently through the use of AI-powered advice (Planethon).

Ultimately, both solutions are expected to enable micro-businesses to adopt more sustainable practices, grow their customer bases (and ensuing revenues), and become more financially resilient.

Limited and restricted access to working capital and credit

> *Access to capital is always one of the biggest challenges [small businesses face]. The whole process of getting a loan is very expensive … And that's one of the problems that we have set out to tackle, to make this very easy and allow merchants to access capital, pretty much instantaneously.*

Marc-Alexander Christ
Founder, SumUp
Mastercard Strive EU Small Business Council Member

Small businesses face restricted access to bank financing in EU markets

In 2023, a quarter of EU small and medium-sized businesses reported severe difficulties in accessing financing,[1] leading many to experience cash flow constraints. The IFC estimates that the annual financing gap for EU micro-companies is in the range of €20 to €112 billion per country, three to five times larger than that of the U.S.[2] Europe's growing SME credit gap is at least partially attributable to strong reliance on bank financing, which is far more dominant in the EU (70%) than in other markets such as the U.S. (40%).[3]

1 European Investment Fund, EIF Research and Market Analysis Working Paper 2023/96, "The European Small Business Finance Outlook 2023," December 2023.
2 IFC, MSME Finance Gap: Assessment of the Shortfalls and Opportunities in Financing Micro, Small, and Medium Enterprises in Emerging Markets, 2017.
3 European Commission and the European Central Bank (ECB), Survey on the Access to Finance of Enterprises (SAFE).

EU banks may struggle to meet micro- and small business finance needs for several reasons, including capital constraints and banking reforms that have tightened lending conditions. Many banks in Europe have become more selective, applying tighter risk management to lending policies and rendering ineligible small businesses with limited financial history, credit history and collateral. This is particularly challenging for new businesses or those requiring small loan sizes, as they face additional hurdles such as information asymmetry, lack of credit history, and disproportionately high transaction costs.[1]

Existing small business financing solutions do not meet micro-businesses' needs

Existing financing solutions often fail to meet the needs of micro-businesses in the EU.

- **The lack of detailed financial records** excludes micro-businesses from existing credit risk assessment models that rely heavily on static algorithms based on historical financial data. This leads to higher capital costs and uncertain outcomes in their credit applications.
- **Fragmented data on financial performance and overall financial health** caused by the use of multiple, disconnected tools for financial management and accounting makes it difficult to use the financial data in banks' assessment models.
- **Limited integration between financial management solutions and banking systems** further complicates the potential for automation and efficient and timely risk assessments.
- **Limited integration of lending products with e-commerce and marketplace platforms** reduces the abilities for micro-businesses to fulfill larger orders or meet growing demands.
- **Rigid loan repayment schedules** often misalign with micro-businesses' cash flow volatility, particularly for those engaged in rapid-paced online sales through B2B marketplaces or e-commerce platforms.

Established financial management solutions also often fall short in leveraging data for real-time insights and reliable forecasting. Many tools require manual data input. Biases in lending and equity finance continue to disadvantage businesses owned by women and members of underserved communities, limiting their access to financial resources.[2]

1 European Commission and EIB, Gap analysis for small and medium-sized enterprises financing in the European Union, December 2019; strategy&, A challenging environment for SMEs, May 2, 2023.
2 European Commission and EIB, Why are women entrepreneurs missing out on funding?, June 2019.

While there has been an influx of challenger neobanks and fintechs[1] into many European markets,[2] adoption by small businesses has been more gradual. Small business adoption can be impacted by a lack of trust in these newer institutions and by limited tools that address the broader business and financial management needs of small enterprises, such as invoicing, reconciliation, and managing late payments.[3] These shortcomings are reflected in small business satisfaction levels.[4] Despite the promise of innovation, these new entrants must refine their small business value proposition to drive widespread adoption among small businesses.

However, small businesses remain open to innovative financial solutions, provided they are better suited to their needs — 85% of SMEs and freelancers expressed a willingness to purchase embedded financial services from non-financial platforms.[3] The digitalization of micro-businesses and markets provides an opportunity to better tailor financial services to their specific needs.

Embedded financial solutions meet micro-businesses in digital ecosystems they understand and trust

Embedded finance addresses some of the shortcomings of traditional stand-alone financial services. Embedded finance refers to the integration of financial services, such as payments, lending, insurance or banking, directly into non-financial platforms or products. For instance, financial services are embedded within digital platforms such as cloud-based accounting, e-commerce, marketplace, payment and social media solutions.[6]

The advantages of embedded finance solutions in distribution, user experience, and customization address key pain points in SME financial services for both small businesses and financial service providers:

1. High customer acquisition costs, leading to elevated prices.
2. Manual effort in the selection process and customization of financial service solutions.
3. Limited visibility for banks into business performance, impacting trust-building.

1 The European Central Bank defines fintechs and neobanks as "a business model in which the production and delivery of banking products and services are based on technology-enabled innovation." European Central Bank, Guide to assessments of fintech credit institution licence applications, March 2018.
2 One study identified 65 such companies in the EU as of 2024. Citterio, Marques, and Tanda, Journal of Financial Services Research, "The Early Days of Neobanks in Europe: Identification, Performance, and Riskiness," July 4, 2024.
3 Open Banking Expo, Insight: Neobanks – why aren't SMEs making the switch?, July 5, 2023.
4 Swan and Aperture, Why SaaS Platforms and Marketplaces will lead the next wave of innovation in SME financial services, January 2024.
3 Swan and Aperture, Why SaaS Platforms and Marketplaces will lead the next wave of innovation in SME financial services, January 2024.
6 McKinsey & Company, "Embedded finance: Who will lead the next payments revolution?," October 13, 2022.

The distribution advantage: These digital platforms have high levels of small business market penetration and high levels of trust among small business owners.[1]

The user experience and time-saving advantage: Embedded finance enables small businesses to access credit through the digital platforms that they already use to conduct their business, without needing to register on another app or website or open a new bank account.

The product customization and credit-scoring advantage: Small businesses generate digital footprints through their activities on various platforms, such as payment processing, e-commerce and financial management tools. These footprints provide valuable data on financial performance, transaction history and business operations. Lenders can analyze this data to assess a business's creditworthiness more accurately, potentially offering better lending terms and more affordable interest rates based on real-time, data-driven insights. This is facilitated by several technical and regulatory developments:

1. Cloud software: SME software was often run on-premise, which did not allow seamless integration of several data sources. This held true for accounting, inventory, ERP (Enterprise Resource Planning) or core banking systems.
2. Software as a service (SaaS) solutions with high focus on connectivity: Most software developed for the heterogeneous needs of SMEs is built especially to be flexibly integrated with systems around them. This includes accounting systems, bank connectivity, business intelligence systems and vertical ERP systems. Overall, this way, one system can hold a high variety of data, even for micro-companies.
3. The open banking push and regulatory framework: Open banking regulations and technology enable non-financial platforms to access bank data, providing software solutions with access to key credit-scoring information. Previously, this type of data access was primarily available only to an SME's primary business bank.

Embedded finance models have therefore evolved and increased their value towards small businesses.[2] By integrating financial services into the platforms and tools that micro-businesses already use and trust, embedded finance can offer more flexible, accessible and cost-effective financial products.

1 Accenture, "Embedded finance for SMEs: Banks and digital platforms," December 15, 2021.
2 Interview with industry expert, 2024.

FIGURE 3

Embedded finance models

Caribou Digital, interviews with industry experts, 2024.

AFFILIATE-LIKE MODELS	DATA-DRIVEN PROPRIETARY MODELS	FULLY INTEGRATED FINANCIAL ECOSYSTEMS	REVERSE EMBEDDING
Early embedded finance solutions often resembed rebranded affiliate models. While simple to implement and potentially high-margin, these models offer limited integration.	Companies are developing their own scoring algorithms to leverage platform data for proprietary scoring and loan products. They obtain lending licenses to facilitate integration.	Offering financial services within financial maangement ecosystems. Building financial services on top of existing tools that consolidate accounting revenue, and other financial data for small businesses.	Financial service providers begin building software products around their core offering, enhancing the comprehensive financial management experience for small businesses.
A travel website offering insurance by brokering a client contact with an insurance provider.	**An online retailer offering buy-now, pay later, credit to customers**	**A liquidity management platform collecting comprehensive financial information can seamlessly offer credit and other financial products.**	**A financial institution building financial management tools and embedding them as a complement to lending products.**

Innovations in the evolving embedded financial services landscape can unlock more opportunities for micro-businesses

> *We've made finance more flexible, but we've not really made it more accessible.*

Alexander Mix
Director of Strategy, Aperture Consulting Founder, Nortos
Mastercard Strive EU Embedded Finance Advisor

Innovation in systems, processes and policies is necessary to maximize the potential of embedded finance for micro-businesses.

- **Innovation in financial data and analytics:** Integrating data and analytics supports alternative credit-scoring models, including innovative, increasingly AI-driven models. These approaches incorporate real-time business performance data, transaction patterns and non-financial metrics to provide a more accurate view of creditworthiness and risk.

  Embedded finance startups may face challenges in validating their credit algorithms and demonstrating the effectiveness of new models without first securing funding and extending significant

amounts of credit. The challenge of validating credit algorithms without initial funding will need to be addressed for new entrants to establish themselves. AI-driven innovations will also need to overcome human-led biases, such as those related to gender or race, that can perpetuate existing barriers to credit.

- **Digital marketplace integrations:** While some large marketplaces already offer embedded finance, further innovation and integration would extend instant, flexible financing options to smaller and medium-sized platforms based on factors such as real-time sales data. This can address the mismatch between rapid online sales and rigid traditional financing solutions across the spectrum of digital marketplaces, from platform giants to niche platforms serving specific sectors or regions.
- **Technical improvements in data-sharing processes:** Improvements in applications' programming interfaces have enhanced system interoperability and reduced fragmentation between solutions. Widespread adoption of electronic identification schemes in the EU has further eased user authentication processes.[1] These developments have enabled automated underwriting decisions for lending at near-zero marginal cost, through instant connections to both public data sources (such as tax records) and private sources (including account transactions and balances).[2]
- **Innovation in product types and terms:** Innovations could support financing options with dynamic repayment terms that adjust based on the business's performance and cash flow patterns. These could be augmented by comprehensive financial management solutions that integrate various tools for automation in invoicing, payroll, cash flow management and forecasting.
- **Advancements in EU regulations:** Forthcoming EU regulations are expected to support the expansion of embedded finance by increasing access to financial data. The proposed financial data access (FIDA) framework[3] and the third European Payment Services Directive (PSD3)[4] are both expected to broaden the scope of financial data accessibility. For instance, the FIDA proposal encompasses a wide range of financial products, as well as data pertinent to credit assessments.[5]

1 European Commission, 2024. Electronic Identification.
2 McKinsey & Company, 2024. Embedded finance: How banks and customer platforms are converging.
3 European Commission, 2023. Framework for financial data access
4 European Commission, 2023. Modernising payment services and opening financial services data: new opportunities for consumers and businesses
5 McKinsey & Company, Embedded finance: How banks and customer platforms are converging, July 15, 2024; Forbes, Embedded Finance in Europe: Shaping Narratives and Building Trust in Financial Innovation, June 3, 2024.

By 2030, 10% to 15% of banks' revenues and 20% to 25% of retail and SME lending revenues may originate in embedded finance, with total European embedded finance revenues potentially reaching €100 billion.[1] This shift could benefit micro-businesses by providing more accessible short-term financing options and by increasing cash flow management and sales through services like "buy now, pay later" options on digital platforms.[2]

Embedded finance fosters micro-business resilience, agility, and profitability

Embedded finance has the potential to significantly impact micro-businesses by addressing several key challenges. By integrating financial products into platforms they already use, it increases micro-businesses' access to liquidity and improves cash flow management, providing efficient access to working capital.

Embedded finance enables businesses to offer flexible payment options to customers, potentially boosting sales. Faster access to capital for inventory and marketing increases liquidity and allows businesses to respond to market demands with more agility. By simplifying cross-border transactions, it can also facilitate international expansion for even the smallest enterprises.

Embedded finance can enhance financial inclusion by offering more accessible credit options to businesses underserved by traditional financial service providers. This increased access, coupled with the likelihood of more competition in the financial sector, could drive innovation and lead to more affordable credit products.

At the same time, solutions need to consider potential risks and unintended consequences. Algorithmic decision-making in lending could perpetuate or exacerbate existing biases, potentially widening financing gaps for underserved micro-business segments. Ease of access to embedded credit could lead to over-indebtedness if not managed responsibly. The extensive use of alternative data sources raises data protection and privacy concerns. Embedded finance providers must ensure responsible lending mechanisms, safeguards against biases, and appropriate transparency and data protection measures.

Ultimately, embedded finance should be viewed as a complement to traditional larger, longer-term financing, filling gaps and providing micro-businesses with a more comprehensive tool kit to manage their finances and drive growth.

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1 McKinsey & Company, Embedded finance: How banks and customer platforms are converging, July 15, 2024.
2 McKinsey & Company, Embedded finance: How banks and customer platforms are converging, July 15, 2024.

The Mastercard Strive EU program is increasing the accessibility and efficiency of embedded finance solutions

Solutions for embedded finance funded under the Mastercard Strive EU Innovation Fund combine elements of user-centric design, AI and data analytics, and process automation to improve financial management and access to capital for micro-businesses. By making these processes more accessible and efficient, they will support micro-business resilience and growth.

Further, to support micro-businesses without the digital infrastructure in place to benefit from embedded finance, the Mastercard Strive EU program is also working on initiatives that assist micro-businesses in transitioning from manual to digital processes. By providing resources, tools, and training that help micro-businesses digitize,the program ensures that even non-digital businesses can participate in and benefit from the growing embedded finance ecosystem.

By supporting both digitalization efforts and embedded finance adoption, Mastercard Strive EU program is helping micro-businesses unlock new opportunities for growth, efficiency and financial resilience, regardless of their starting point on the digital transformation journey.

The Mastercard Strive EU program will fund two companies aiming to unlock working capital and credit through embedded finance: Bizcuit and Valerian Capital. Both organizations aim to make financial services more accessible by automating processes, reducing costs, and simplifying complex tasks. They support the Innovation Fund's aim to support closing the resource gaps that can keep micro-businesses from accessing appropriate financial solutions.

- The integration of comprehensive financial management tools into existing financial services apps, automating invoice processing, streamlining payments, and simplifying access to credit in a familiar digital environment (Bizcuit)
- User-centric web application that simplifies the funding process for micro-businesses and uses diverse data sources and AI to provide quick credit decisions and business insights (Valerian)

Despite the resilience to macroeconomic and geopolitical challenges that European micro-businesses have shown in recent years, they are not yet in the clear.

They face key challenges, outlined previously, that hinder their progress towards the twin transition of a digital and sustainable future, ultimately impacting their resilience and prosperity. Innovative digital and data-first solutions funded by the Mastercard Strive EU Innovation Fund have the potential to drive significant improvements in micro-business resilience and growth. They also drive ecosystem learning, by generating lessons and insights for other organizations across the EU.

The Innovation Fund also offered important insights about EU startups and innovators developing B2B solutions. The Mastercard Strive EU program analyzed all 495 eligible applications to better understand the applicants, the challenges they sought to address, and the solutions they proposed. Key highlights are shared in an interactive format, and insight pieces will be published in the Mastercard Strive Insights Library.[1]

1 Mastercard Strive, Insights Library.

Future outlook

Small businesses are essential for driving inclusive growth across the European Union, and against the backdrop of unprecedented macroeconomic and geopolitical challenges, the EU's twin transition toward a digital and sustainable future has emerged as essential for Europe's competitiveness and prosperity. Yet micro-businesses lag behind other businesses in this transition. To address the key concerns that hinder their progress, the Mastercard Strive EU program partnered with 10 Innovation Fund winners to support micro-businesses with innovative, tailored solutions to get capital, go digital, and grow networks and know-how:

1. **Bizcuit (Netherlands):** Offers an embedded finance solution enabling micro-businesses to manage daily finances through their bank app, enhancing cash flow management and decision-making.
2. **Cresco Cybersecurity (Belgium):** Develops an all-in-one penetration testing solution tailored for micro-businesses to identify and mitigate cyber threats.
3. **Direct Market (France):** Provides a digital marketplace connecting micro-agribusinesses with local retailers and large buyers, facilitating efficient sourcing of locally grown produce.
4. **It Goes Forward (Netherlands):** Introduces a SaaS solution for e-commerce returns, allowing peer-to-peer exchanges to reduce return rates, operational costs and carbon emissions.
5. **Lupasafe (Netherlands):** Offers comprehensive cybersecurity monitoring to reduce risks for micro-businesses.
6. **Ragna (Sweden):** An AI-powered sustainability advisor assisting micro-businesses in navigating environmental regulations and implementing sustainable practices.
7. **Redamp.io (Czech Republic):** Provides an affordable, cloud-based cybersecurity platform designed for micro-businesses to enhance their security posture.
8. ***tilt* (Germany):** Enables banks to develop climate strategies for micro-business lending portfolios, supporting green transformations.
9. **Valerian Capital (Luxembourg):** Offers a data-driven financing solution with an intuitive interface, providing micro-businesses quick access to funding and AI-powered analytics.
10. **IVÆKST (Denmark):** Develops AI HUB, assessing micro-businesses' AI potential and equipping them with essential tools for marketing, financial planning and operational efficiency.

> *Small businesses are the powerhouse of entrepreneurial spirit and resilience across Europe, that's why creating the conditions for them to thrive is fundamental for ensuring sustainable and inclusive economic growth. By supporting digital and data-first solutions, we hope to equip European small businesses with the technology and innovation they need to unlock their full potential and continue to narrow economic divides in communities across the continent.*

Payal Dalal
Executive Vice President of Global Programs, Mastercard Center for Inclusive Growth

Looking ahead, we anticipate the following trends to shape how micro-businesses adapt and evolve within the European Union on their journey towards greater digitalization and sustainability:

- **AI-driven productivity revolution**: We expect AI adoption to continue, potentially widening the digital divide between small and large businesses as well as between digital and non-digital firms. As compliance frameworks come into effect, solutions may become clearer and more relevant for MSEs, making them more cost-effective. Virtual experts could serve as an equalizer between MSEs and larger companies. However, we may also see job losses across the sector as AI reshapes the nature of work.
- **Evolving cybersecurity landscape**: Cybersecurity threats will continue to intensify, posing significant risks for MSEs. Cybersecurity solutions may become more prevalent and comprehensive (e.g., insurance, one-stop shops, cloud-based solutions), but these solutions risk missing MSEs if not designed appropriately. Regulatory compliance may also drive increased interest in cybersecurity, particularly within B2B supply chains.
- **ESG reporting as a competitive advantage**: This reporting will shift from nice to have to need to have. MSEs will face increasing regulatory and supply chain driven requirements to adopt solutions (including AI solutions) for ESG reporting. Again to avoid widening the gap between MSE and larger companies, between digital and non-digital we need to develop tailored solutions.
- **Financial services evolution**: The financial services landscape will continue to transform, with embedded finance becoming increasingly important. Alternative lending models, open banking, and new regulations will enhance data sharing, creating significant new opportunities for MSEs to benefit from the evolving financial services ecosystem. Partnerships with tech providers will also play a critical role in facilitating digital transformation.

- **We need more integrated risk management and data-driven decision making**. The data revolution provides more information than ever before, and we must harness technology to improve both cybersecurity and sustainability risk assessments, enable access to finance, and drive better business outcomes.

In this rapidly evolving landscape, the path forward for micro-businesses in the European Union and beyond, requires a concerted, sector-wide approach. The Mastercard Strive EU program is committed to fostering partnerships across all fronts — from technical experts, advisers and financial institutions to nonprofits, fintechs, investors, civil society and the public sector. By building a connected and supportive ecosystem, we can ensure that micro-businesses in Europe are not only resilient but also positioned to lead in digital transformation, sustainability and risk management.

Join us in empowering these businesses to adopt new technologies, navigate emerging regulatory landscapes, and thrive in a competitive global market.

Appendix: Glossary

Artificial intelligence (AI)	AI refers to the simulation of human intelligence in machines that are designed to think and learn. These systems can perform tasks such as problem-solving, pattern recognition, and decision-making, often autonomously or with minimal human intervention.
Climate neutrality	Climate neutrality is the goal of achieving a balance between the amount of greenhouse gases emitted into the atmosphere and the amount removed, resulting in a net-zero impact on the climate. This is a key target in global efforts to combat climate change.
Corporate Sustainability Reporting Directive (CSRD)	CSRD is an EU regulation that mandates large companies to disclose detailed information on how their activities impact people and the environment. It aims to improve transparency on corporate sustainability and encourages responsible business practices.
Cyber insurance	Cyber insurance coverage protects businesses from financial losses resulting from cyberattacks, data breaches, or other cybersecurity incidents.
Cyber resilience	Cyber resilience refers to an organization's ability to withstand, respond to, and recover from cyberattacks and disruptions, ensuring that critical operations can continue despite the attack.
Cyberattacks	Cyberattacks are deliberate attempts by malicious actors to disrupt, damage, or gain unauthorized access to computer systems, networks, or data. These can include hacking, phishing, and ransomware attacks.
Cybersecurity	Cybersecurity refers to the measures and practices used to protect computers, networks, and data from unauthorized access, attacks, or damage. It involves safeguarding digital infrastructure against threats like hacking and malware.
Cybersecurity threats	Cybersecurity threats refer to potential dangers to digital systems that could compromise the security, integrity, and availability of data. These include viruses, malware, phishing, and other forms of cyberattacks.
Digitalization	Digitalization is the process of converting analog information into digital form and integrating digital technologies into all aspects of business, government, and society to enhance processes and services.
Digital divide	The digital divide refers to the gap between those who have access to digital technologies (such as the internet) and those who do not, often due to socioeconomic, geographic, and/or infrastructural barriers.

Digital intensity	Digital intensity refers to the extent to which digital technologies and tools are used by a company or industry in their operations and decision-making processes.
Directive on Corporate Sustainability Due Diligence (CSDDD)	CSDDD is an EU initiative that requires companies to identify, prevent, and mitigate potential negative impacts on human rights and the environment throughout their supply chains. It encourages responsible business conduct.
Distributed denial-of-service (DDoS) attacks	DDoS attacks are cyberattacks where multiple systems flood a targeted server, network, or service with overwhelming traffic, causing it to become unavailable to users.
Embedded finance	Embedded finance refers to the integration of financial services, such as payments or lending, into non-financial platforms or products, enabling users to access financial functions seamlessly within other digital ecosystems.
Employment and real value added	Employment refers to the number of people working in an economy. Real value added, a key measure of economic productivity, refers to the economic value that businesses generate, adjusted for inflation.
Environmental, social and governance (ESG)	ESG refers to the three key factors used to measure the sustainability and ethical impact of a company's operations: environmental factors (such as carbon footprint), social factors (such as labor practices), and governance factors (such as corporate transparency).
Enterprise Resource Planning (ERP)	A type of software that organizations use to manage and integrate essential business processes in a unified system, such as finance, human resources, manufacturing, supply chain, and inventory management. ERP systems improve efficiency by streamlining workflows and providing real-time data across departments.
EU Green Deal	The EU Green Deal is a comprehensive plan by the European Union to make the EU's economy sustainable by achieving climate neutrality by 2050. It includes policies and investments in clean energy, biodiversity, and emission reduction.
Financing gap	A financing gap refers to the shortfall between the amount of funding required and the actual funds available for investment, particularly in areas such as innovation, green technologies, and small businesses.
Generative AI	Generative AI is a type of artificial intelligence that can create new content, such as text, images, music, and code, based on learned patterns from data. Examples include language models that generate human-like text.

Green business certifications	Green business certifications are programs that recognize companies for their environmentally sustainable practices. Certifications are awarded based on adherence to specific standards in reducing environmental impact.
Green technologies	Green technologies are environmentally friendly innovations that help reduce negative impacts on the environment, such as renewable energy, energy-efficient products, and technologies for reducing waste and pollution.
Inclusive growth	Inclusive growth refers to economic growth that is distributed fairly across society and creates opportunities for all individuals, especially the most disadvantaged, to participate and benefit.
Intellectual property and privacy	Intellectual property refers to creations of the mind, such as inventions or artistic works, that are legally protected from unauthorized use. Privacy refers to the right to control personal information and protect it from unauthorized access.
Machine learning and deep learning	Machine learning is a subset of AI that allows computers to learn and improve from experience without being explicitly programmed. Deep learning is a further subset of machine learning, where artificial neural networks mimic the workings of the human brain to solve complex problems.
Micro-businesses	The official EC definition of SMEs takes account of three different factors: level of employment, level of turnover, and size of balance sheet. Micro-businesses are enterprises that have fewer than 10 employees, and have either an annual turnover of less than €2 million or a balance sheet total of less than €2 million.
Micro- and small enterprises (MSEs)	Micro- and small enterprises (MSEs) in the EU comprise over 99% of all businesses, employing around two-thirds of the private-sector workforce. Defined as businesses with fewer than 50 employees, MSEs are essential for economic growth and innovation but often face challenges in accessing financing, digital tools, and skilled labor. The EU provides targeted support to help these businesses thrive in a competitive market.
Net-zero future	A net-zero future refers to a state where the amount of greenhouse gases emitted is balanced by the amount removed from the atmosphere, often achieved through emissions reduction and carbon offsetting.
Ransomware	Ransomware is a type of malicious software that locks or encrypts a victim's data, demanding a ransom to restore access. It's a form of cyberattack used for extortion.

Software as a service (SaaS)	SaaS is a cloud-based software delivery model where applications are hosted by a provider and accessed by users over the internet. SaaS allows users to access software on a subscription basis without needing to install or manage the software on local devices, enabling easy updates, scalability, and remote access.
Small businesses	The official EC definition of SMEs takes account of three different factors: level of employment, level of turnover, and size of balance sheet. Small businesses are enterprises that have between 11 and 49 employees, and have either an annual turnover of less than €10 million or a balance sheet total of less than €10 million.
Small and medium enterprises (SMEs)	The official EC definition of SMEs takes account of three different factors: level of employment, level of turnover, and size of balance sheet. SMEs are enterprises that have between 50 and 250 employees, and have either an annual turnover of less than €50 million or a balance sheet total of less than €43 million.
Sustainability	Sustainability refers to meeting the needs of the present without compromising the ability of future generations to meet their own needs, often through practices that conserve resources and minimize environmental impact.
Technological sovereignty	Technological sovereignty refers to the ability of a country or region to have control over its own technological infrastructure and capabilities, reducing reliance on foreign technologies and ensuring security and autonomy in key areas.
Twin transition toward a digital and sustainable future	The twin transition refers to the simultaneous transformation toward a more digitalized economy and the shift toward sustainability, both of which are seen as necessary for future economic resilience and environmental preservation.
User-centric design	User-centric design is a design approach that prioritizes the needs, preferences, and experiences of end users throughout the product development process, ensuring that products are intuitive, useful, and accessible.
Wealth (as measured by value added)	Wealth, as measured by value added, refers to the economic value created in a production process, typically calculated as the difference between the revenue generated by goods and services and the costs of production.

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