AI and sustainability:
The opportunity for brands

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Jeremy Goldman, Chief Executive Office and Founder of Futureproof and a Futurist, has been working with companies looking to take their operations online and inject 'social' into their processes for over a decade. Under Jeremy's leadership, Kiehl's won the 2009 WebAward for Outstanding Achievement in Web Development, achieved a Top 25 ranking in the L2 Digital IQ Index in the Beauty & Skincare category, and received a Top 50 Facebook IQ ranking among all luxury brands. While at TEMPTU, Jeremy developed a partnership between TEMPTU and Beyoncé's Deréon fashion line that resulted in TEMPTU's largest-ever sales period. During his tenure, TEMPTU won the ICMAD Award for Website Innovation, and went on to help found a luxury division at Unilever. Jeremy earned his MBA in information systems and marketing at the University of Maryland's Robert H. Smith School of Business. His views have been featured in publications such as *Mashable*, *Wall Street Journal*, *Smart Money*, *ReadWriteWeb*, *The Next Web*, *The Star-Ledger* and *Internet Retailer Magazine*, and his campaigns have been featured in *Gawker* and *Ads of the World*. Jeremy's first book, *Going Social: Excite Customers, Generate Buzz, and Energize Your Brand with the Power of Social Media* was released by AMACOM Books in November 2012, hitting the No. 1 spot on Kindle for social media and business. In his spare time, Jeremy blogs and curates news daily to his Twitter following of 55,000.

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Abstract   The opportunity to advance green initiatives with advanced technologies is endless, and this new area of growth will bring a number of revenue opportunities. Consumers, governments, and special interest groups are willing to reward brands for their sustainable practices, in which artificial intelligence (AI) can play a major role. AI can be a force for good and lift how a brand is perceived — but it has to be championed internally by proving its ROI, using the right vendors, and being properly implemented and well-communicated to consumers. As AI can help synthesise large amounts of data and automate tasks, it brings new possibilities for advancing green initiatives. Because of environmental concerns across the globe, such as greenhouse gas (GHG) emissions and pollution, governments and corporations are championing these initiatives. For example, over 5,000 companies enrolled in the United Nations' Race to Zero campaign in 2020; this initiative seeks to secure commitments to reduce GHG emissions.

KEYWORDS: artificial intelligence, AI, marketing, sustainability, green, branding, promoting sustainability, AI sustainability

DEFINING AI

Simply put, artificial intelligence (AI) is the replication of human intelligence functions by computer systems. Some examples of specific AI applications include:

- *Natural language processing (NLP)*: Comprehends spoken and written speech in a manner akin to that of people;
- *Speech recognition*: Converts spoken text into written text;
- *Machine vision*: Trains machines how to comprehend and interpret visual data;
- *Expert systems*: Mimics the decision making and actions of a human who possesses knowledge and experience in a certain field. Many (but not all) opportunities to leverage AI to improve sustainability fall within the realm of expert systems.

CONSUMERS' RELATIONSHIP WITH AI

While we have defined AI above, not all consumers understand or are comfortable with it. Despite its potential impact, AI is an unknown concept to many consumers, with only 12 per cent very familiar with the terminology. Those who are somewhat familiar may not know where automation ends and 'true AI' begins. What is more, only half of those aware of this type of technology trust it.[1]

Given AI's trust hurdle, integrating it into aspects of business may require some convincing.

CONSUMERS AND SUSTAINABILITY

Although consumers view AI with a mix of confusion and apprehension, their attitudes about sustainability are more uniform. Consider the following from Provoke Insights research:

- Over a quarter of consumers state that they consider themselves environmentally friendly;

- A fifth of Americans strongly agree that they would pay more for items that are sustainably sourced;
- Generation Z and Millennials are significantly more likely to prioritise sustainability in purchases than their older cohorts.[2]

Other research backs up Provoke Insight's findings. Younger consumers who are willing to pay a higher price tend to prioritise attributes such as organic sourcing, transparency with respect to environmental impact and sustainable packaging more than their older counterparts (see Figure 1).

Approximately three in ten consumers worldwide are willing to pay extra for organic products and more sustainable goods and services (see Figure 2).

While some consumers are willing to pay more for sustainable products already, others want to wait until costs for these products come down — either through AI or other means. Consider the following:

- The No. 1 reason (52 per cent) UK adults have not adopted a more sustainable lifestyle is expense (see Figure 3);
- That goes along with a September 2021 IBM/NRF study that 35 per cent of consumers would buy more sustainable goods if their prices were comparable to other products (see Figures 4 and 5).[3]

Considering AI and automation have the ability to reduce a brand's expenses, if some of those savings can be passed on to customers, that obstacle will dissipate for more consumers.

Of course, not all product categories are created equal. When asked which product categories are more important for prioritising the purchase of eco-friendly/sustainable versions, food (50 per cent) leads by a wide margin, followed by cleaning products (39 per cent), clothing, and water bottles/coffee cups (see Figure 6).

Preferred Sustainable Attributes Among Grocery Buyers Worldwide Willing to Pay a Higher Price*, by Generation, Nov 2021

% of respondents in each group

Gen Z (18-24)
- Organic sourcing: 72%
- Information on the environmental impact of the product: 63%
- Sustainable packaging: 64%

Millennials (25-40)
- Organic sourcing: 66%
- Information on the environmental impact of the product: 59%
- Sustainable packaging: 54%

Gen X (41-56)
- Organic sourcing: 60%
- Information on the environmental impact of the product: 41%
- Sustainable packaging: 39%

Baby boomers (57-75)
- Organic sourcing: 56%
- Information on the environmental impact of the product: 26%
- Sustainable packaging: 30%

Total
- Organic sourcing: 62%
- Information on the environmental impact of the product: 47%
- Sustainable packaging: 44%

■ Organic sourcing
■ Information on the environmental impact of the product
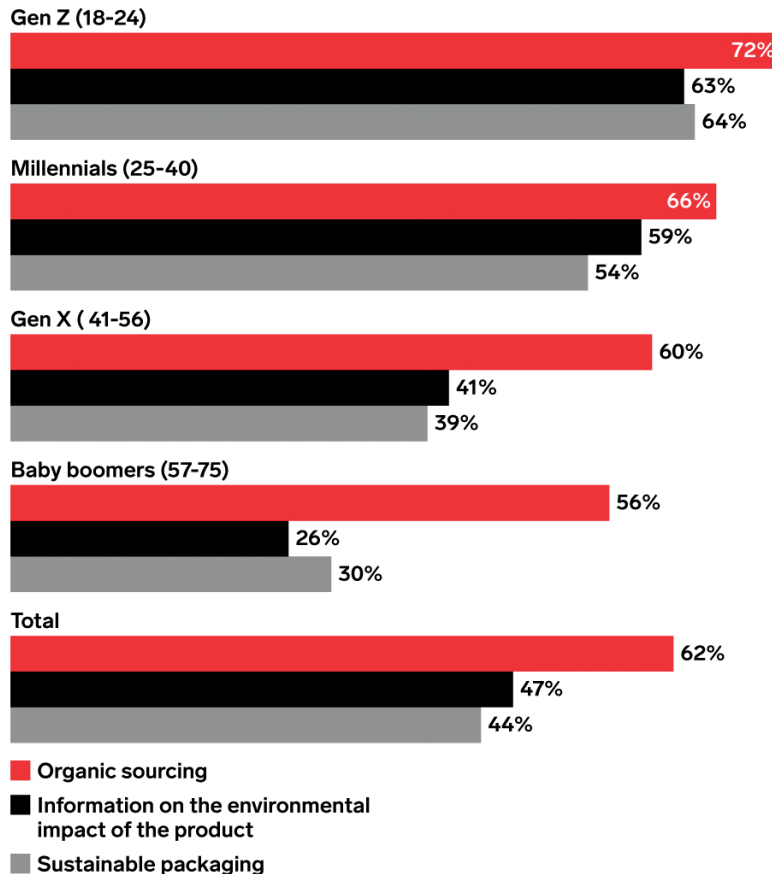■ Sustainable packaging

Figure 1: Preferred sustainable attributes among grocery buyers worldwide
*Note: organic sourcing n=2,347; information on environmental impact n=915; sustainable packaging n=1,483; *shoppers paid a higher price the last time they were shopping for groceries
Source: Capgemini, 'What Matters to Today's Consumer: 2022 Consumer Behavior Tracker for the Consumer Products and Retail Industries', Jan 2022*

Across Europe, one in three (33 per cent) adults agree that social media has increased their awareness of buying goods that are ethical and/or sustainable. As social media continues to capture more and more of consumers' time, it is natural to expect its influence to increase — and with it, consumer awareness and appetite for sustainability should rise as well (see Figure 7).

BRANDS AND SUSTAINABILITY

Nearly two in three (63 per cent) business decision makers believe AI can have 'great' impact on their company's sustainable business practices (see Figure 8).

Companies that manage food inventory, such as PreciTaste and Choco, employ AI-based forecasting techniques to estimate how much of a specific ingredient a restaurant kitchen will require based

Internet Users in Select Countries Who Are Willing to Pay Extra for Sustainable Goods, by Initiative, May 2021
% of respondents

	Products made in country	Organic products	More sustainable goods and services	Ethically sourced products	Brands that contribute to the community
France	47%	31%	30%	29%	20%
Germany	35%	34%	30%	23%	23%
India	33%	39%	32%	22%	26%
UK	33%	22%	33%	32%	22%
Brazil	30%	41%	48%	34%	38%
China	28%	39%	32%	30%	24%
US	27%	21%	18%	18%	18%
Total	**37%**	**31%**	**30%**	**27%**	**25%**

Figure 2: Consumers who are willing to pay extra for sustainable goods
Note: ages 18+; worldwide figures includes countries not shown
Source: EY, 'EY Future Consumer Index: 7th Edition', June 24, 2021

on past customer traffic, sales data and forecasting projections. The restaurant can then buy a more precise amount of food necessary to serve patrons, resulting in minimal food waste and a win for the environment. Using smarter food inventory management can cut food waste by up to 80 per cent.[4]

At the same time as consumers are prioritising sustainability, they are also becoming less tolerant of waste. Consumers are seeing the disadvantages of 'fast products' such as 'fast furniture', which do not last as long and lead to increased waste, and demand for more durable products is on the rise as a result.[5] More companies are focusing on long-term durability of their products by providing software updates and shipping parts to their consumers. AI-based technologies and analytics can help determine whether extending a product's life is optimal.

THE ROLE OF SPECIAL INTEREST GROUPS AND GOVERNMENTS IN PROMOTING SUSTAINABILITY

Special interest groups are getting the message out to governments and corporations that consumers care about green initiatives. Think tanks such as Data for Progress continue to poll consumers' interest in green projects and ultimately show that companies and governments need to support sustainability initiatives.

In the US, special interest groups have shaped and prevented sustainability initiatives from occurring. Green issues are able to be pushed more depending on the state. For example, in Texas, the oil industry has a strong influence, and as a result, the state is below the US average in producing electricity from clean energy sources. Clean energy special interest groups have been able to build a powerful foothold in other states, however. In California, a growing
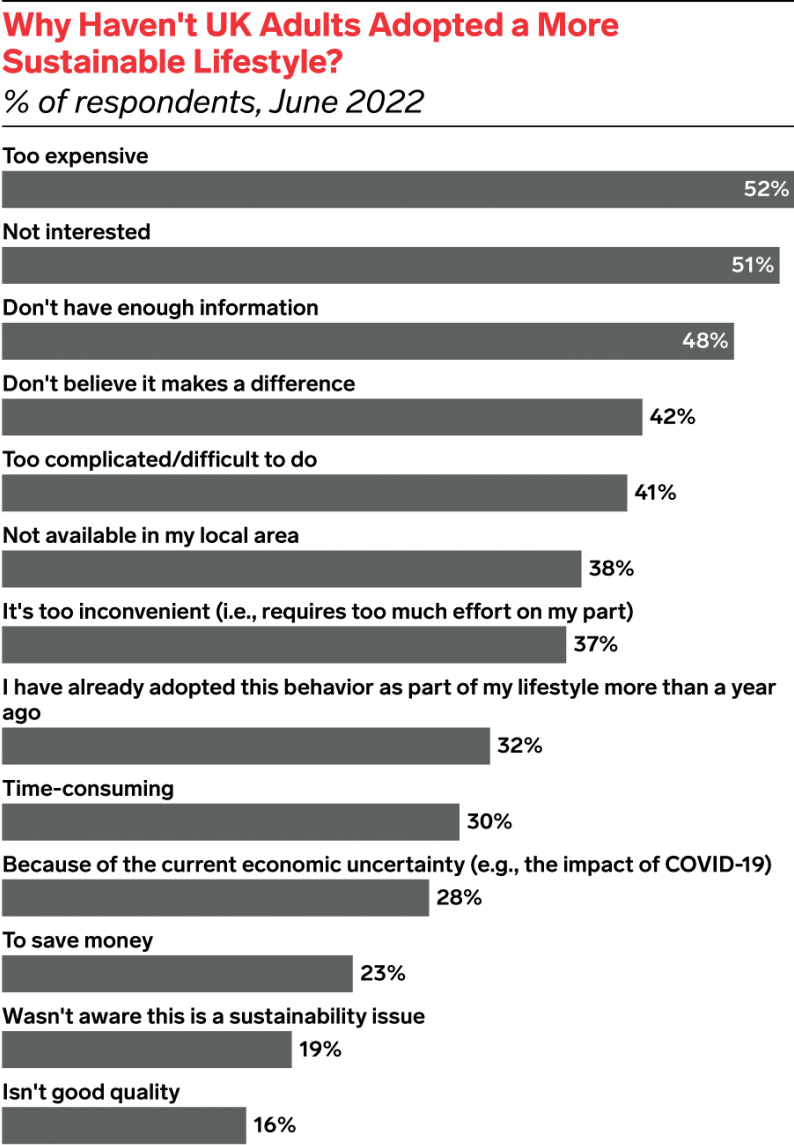
Why Haven't UK Adults Adopted a More Sustainable Lifestyle?
% of respondents, June 2022

Too expensive
52%

Not interested
51%

Don't have enough information
48%

Don't believe it makes a difference
42%

Too complicated/difficult to do
41%

Not available in my local area
38%

It's too inconvenient (i.e., requires too much effort on my part)
37%

I have already adopted this behavior as part of my lifestyle more than a year ago
32%

Time-consuming
30%

Because of the current economic uncertainty (e.g., the impact of COVID-19)
28%

To save money
23%

Wasn't aware this is a sustainability issue
19%

Isn't good quality
16%

Figure 3: Reasons why UK adults have not adopted a more sustainable lifestyle
Note: ages 18+; among respondents who selected '"have not done the following action" in the past 12 months in an effort to adopt a more sustainable lifestyle' at least once
Source: Deloitte, 'Sustainable Consumer 2022' conducted by YouGov, July 4, 2022

number of electricity systems are clean, and there are several new policies in place to build new wind, electricity and geothermal capabilities.[6]

Given governments' importance as buyers of sustainable products, their increasing desire for eco-friendly goods and services matters a great deal. Consider the following:

- In December 2021, US President Joe Biden signed Executive Order 14057 to help invigorate the clean energy industry and jobs and reduce greenhouse gas (GHG) emissions;[7]
- €600bn is allocated to the European Green Deal, which was approved in 2022. The goal is to reduce carbon emissions by

Sustainability Criteria That Are Important to US Adults When Considering a Purchase, June 2022
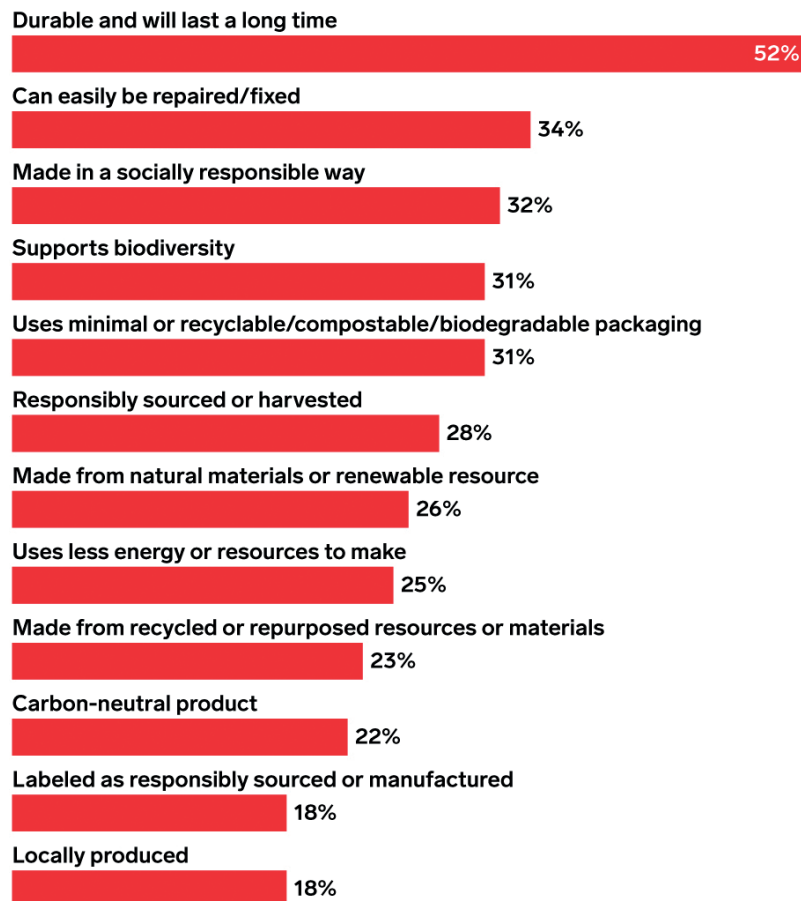
% of respondents

Durable and will last a long time
52%

Can easily be repaired/fixed
34%

Made in a socially responsible way
32%

Supports biodiversity
31%

Uses minimal or recyclable/compostable/biodegradable packaging
31%

Responsibly sourced or harvested
28%

Made from natural materials or renewable resource
26%

Uses less energy or resources to make
25%

Made from recycled or repurposed resources or materials
23%

Carbon-neutral product
22%

Labeled as responsibly sourced or manufactured
18%

Locally produced
18%

Figure 4: Sustainable criteria that are important to US adult consumers
Note: ages 18+
Source: Deloitte, 'Sustainable Consumer 2022' conducted by YouGov, July 4, 2022

55 per cent by 2030 and achieve no net emissions by 2050.[8] The definition of net zero emissions is defined by the United Nations (UN) as 'cutting greenhouse gas emissions to as close to zero as possible, with any remaining emissions re-absorbed from the atmosphere, by oceans and forests for instance'.[9] This plan will force many businesses that are on the fence to prioritise sustainability;

• In November 2022, the European Union (EU) adopted the Corporate Sustainability Reporting Directive (CSRD), which requires companies to disclose information about risks, opportunities and impacts of their activities on people and the environment.[10]

THE TRANSFORMATIONAL POWER OF AI

AI will become a major part of making companies more sustainable. By 2030, AI is expected to integrate into multiple

Reasons for Buying Sustainable Products According to Consumers Worldwide, Sep 2021
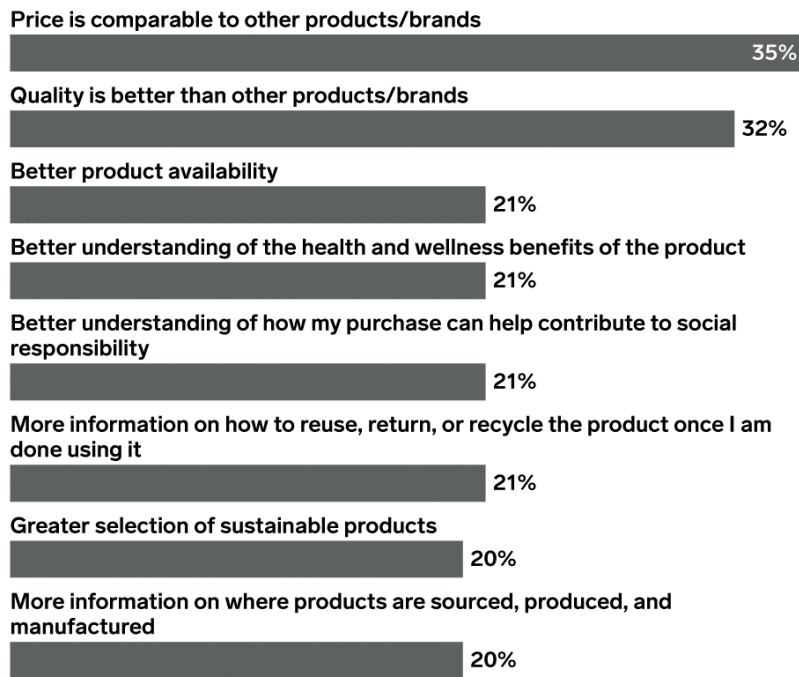*% of respondents*

Price is comparable to other products/brands
35%

Quality is better than other products/brands
32%

Better product availability
21%

Better understanding of the health and wellness benefits of the product
21%

Better understanding of how my purchase can help contribute to social responsibility
21%

More information on how to reuse, return, or recycle the product once I am done using it
21%

Greater selection of sustainable products
20%

More information on where products are sourced, produced, and manufactured
20%

Figure 5: Worldwide consumer reasons for buying sustainable products
Source: IBM Institute for Business Value, 'Consumers Want It All: Hybrid shopping, Sustainability, and Purpose-driven Brands' in association with the National Retail Federation (NRF), Jan 13, 2022

environmental applications and contribute up to US$5.2tr to the world's economy.[11]

AI software spending worldwide will surge from US$33bn in 2021 to US$64bn in 2025.[12]

AI will boost the effectiveness of sustainability initiatives in multiple ways:

- Facilitating better analysis and monitoring of production processes, which helps improve output and reduce expenses;
- Helping streamline multiple areas of reverse logistics, such as tracking return conditions and the amount of inventory on hand:[13]
  - The right analytics platform helps evaluate consumer fraud and the cost of returns and will increase the earnings

impact of return versus evaluating the cost alone;[14]

- Better efficiencies to improve output, eg smart grids that manage multiple grids;
- Better automation reduces errors and improves the efficiency of the labour workforce, ultimately lowering labour costs.[15] Of course, overwhelmingly, consumers and businesses want automation to be balanced with the human touch;
  - More than half of respondents say responsible AI expertise and talent (54 per cent) and internal training/ knowledge (53 per cent) hamper their company's AI initiatives, per MIT and BCG;[16]

US Adults Who Prioritize Purchasing the Eco-Friendly/Sustainable Version of Products, by Type, March 2021
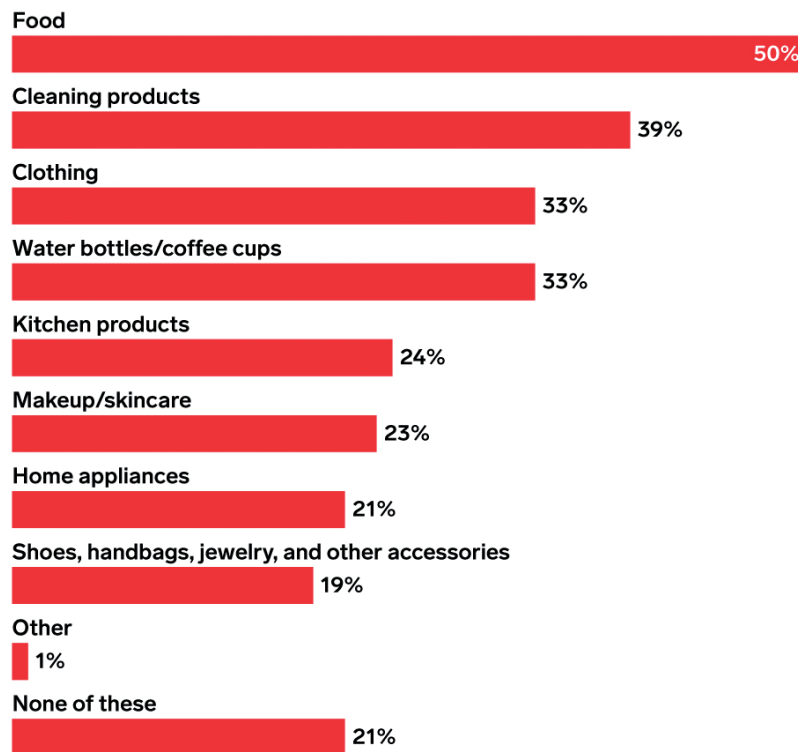*% of respondents*

Food
50%

Cleaning products
39%

Clothing
33%

Water bottles/coffee cups
33%

Kitchen products
24%

Makeup/skincare
23%

Home appliances
21%

Shoes, handbags, jewelry, and other accessories
19%

Other
1%

None of these
21%

Figure 6: US adults that prioritise purchasing eco-friendly/sustainable products
Note: ages 18+
Source: Lending Tree, April 20, 2021

- Synthesis of large amounts of data into actionable sustainability strategies.

With more data and better analysis, sustainability initiatives become more transparent, allowing marketers to tell a clearer story about how their brand supports green programmes. Marketing green initiatives can include providing consumers and stakeholders proof points on specific aspects of their sustainability activities in press releases, company reports and throughout advertising.

While adoption varies from market to market, around 34 per cent of business decision makers have deployed AI, with another 42 per cent exploring the possibility.[17] Often AI initiatives include purchasing software packages that include this technology.

On a global level, last mile is responsible for up to 50 per cent of all delivery-related carbon emissions. Approximately 4m tons are emitted yearly by the last mile delivery sector in the US alone, with another 3m tons in Europe. Markets such as India (500,000 tons) will only increase their last-mile emissions as e-commerce penetration grows.[18] E-commerce will account for 19.7 per cent of all retail sales worldwide in 2022 and should reach 24 per cent of retail sales by 2026 (see Figure 9). As sales in that channel

Adults in Europe Who Agree that Social Media Has Increased Their Awareness of Buying Goods that Are Ethical/Sustainable, by Country, Aug 2021

% of respondents

Ireland	47%
Finland	46%
Portugal	46%
Greece	42%
Poland	40%
Italy	39%
Romania	38%
Spain	38%
UK	38%
Lithuania	35%
Switzerland	31%
Austria	31%
Slovakia	31%
Denmark	30%
Norway	30%
Sweden	30%
Czech Republic	29%
Estonia	28%
Latvia	27%
Belgium	26%
Germany	26%
Netherlands	26%
Hungary	25%
France	24%
Europe	**33%**

Figure 7: Adults in Europe who agree that social media has increased their awareness of eco-friendly/sustainable products
Note: ages 18+
Source: Intrum, 'European Consumer Payment Report 2021', Nov 30, 2021

increase, so do the number of parcels, drivers and delivery personnel, as well as the vehicles used to transport these goods.

Brands that invest in self-learning programs with dynamic routing algorithms to solve the last mile problem have the potential to save money, promote sustainability and earn a positive branding halo in a rare win–win–win. These AI-based programs can plan the best routes for drivers to follow in order to make dependable and on-time deliveries while taking into account numerous real-world limitations and business rules.

Marketing AI investments to consumers

Not only does AI technology allow brands to become more sustainable, it

Extent to Which Knowledge Workers and Business Decision-Makers Worldwide Believe AI, Machine Learning, and Data Analytics Can Help Their Company's Sustainable Business Practices, Aug 2021
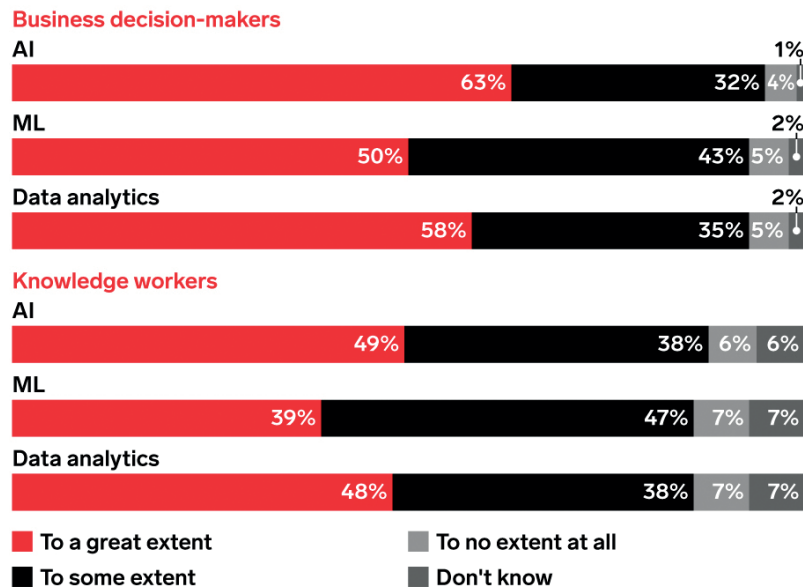
% of respondents

Business decision-makers

AI
63% | 32% | 4% | 1%

ML
50% | 43% | 5% | 2%

Data analytics
58% | 35% | 5% | 2%

Knowledge workers

AI
49% | 38% | 6% | 6%

ML
39% | 47% | 7% | 7%

Data analytics
48% | 38% | 7% | 7%

- ■ To a great extent
- ■ To some extent
- ■ To no extent at all
- ■ Don't know

Figure 8: Decision makers believe AI, machine learning (ML) and data analytics help sustainable business practices
Note: numbers may not add up to 100% due to rounding
Source: Cloudera, 'Limitless: The Positive Power of AI' conducted by Sapio Research, March 16, 2022

also gives brands permission to promote their sustainable bona fides in marketing campaigns to consumers. The following brands have made concerted efforts to invest in AI to address sustainability issues and have not been shy about discussing their efforts with the public.

Sonos

The popular wireless home sound system brand promotes the company's commitment to sustainability initiatives in a number of ways. When it comes to carbon emissions, Sonos maps out its current emissions to identify areas in which it can cut, and ultimately focuses on being carbon net-neutral by 2040.[19] Sonos uses AI to help map the planet in order to identify land conservation opportunities and educate consumers about biodiversity. The company combines bioacoustics with AI to help product the environment. The company promotes this effort in its 'giving back' page on its website, its ESG annual report and its articles.[20]

Salesforce

Salesforce launched Net Zero Cloud to track companies' environmental footprint. The platform allows companies to track real-time sustainability data and collaborate with vendors. The results help companies become greener and allow these brands

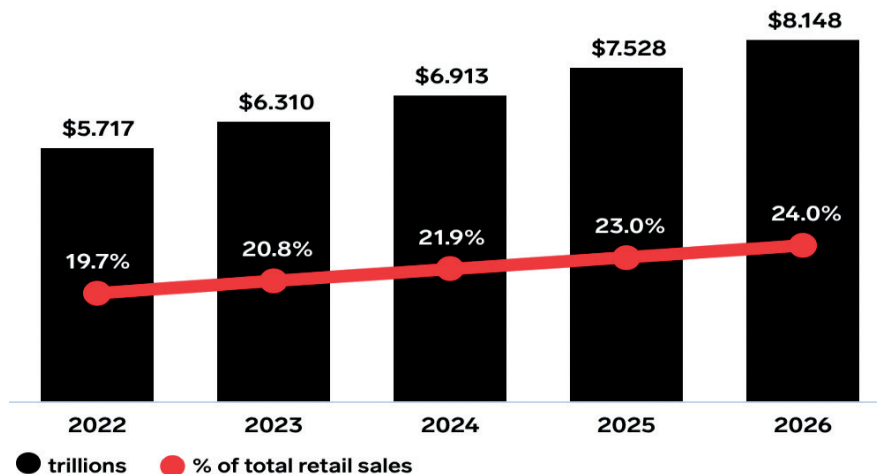### Retail Ecommerce Sales
Worldwide, 2022-2026

Figure 9: Retail e-commerce sales 2022–6
Note: all years converted to USD using 2021 exchange rates; Exchange Rate; includes products or services ordered using the internet via any device, regardless of the method of payment or fulfillment; excludes travel and event tickets, payments such as bill pay, taxes, or money transfers, food services and drinking place sales, gambling and other vice goods sales
Source: eMarketer. June 2022

to show that they are active in effective, sustainable initiatives. Examples of brands that use this technology include the office furniture company MillerKnoll and telecommunications company TELUS.[21] MillerKnoll uses the information to inform its marketing, commerce and service teams to provide and communicate to their consumers better products for the environment.[22] TELUS had the goal to have net zero emissions by 2030, and Net Zero Cloud allowed them to determine how the company is keeping up with the objective in real time.[23]

TomTom

TomTom set up an AI system called generative adversarial networks (GAN), a means of generative modelling via deep learning (DL). The system accounts for 400,000km worldwide and helps identify traffic jams. TomTom partnered with Microsoft on the initiative, and its algorithm is continually improving.[24] The mapping provider publicises its efforts through its blog, social media and public relations, which has attracted customers like Michelin, Uber and Ford.

Hewlett Packard

The computing company's goal is to be the most sustainable technology company in the world. The corporation's lofty green initiative goals include net zero emissions by 2040, 75 per cent circularity for its products by 2030, and countering deforestation for non–Hewlett Packard (HP) paper used in its printers by 2030.[25] As a company that promotes its green initiatives through its sustainability reports, websites, advertising

and other forms of communication, it is not surprising that it would find ways to use AI to help solve the Earth's issues.

For example, HP teamed up with the NGO Conservation International to help determine early warning signs against the endangerment of animal species. The partnership was able to analyse millions of photos of animals to determine changes in the environment using data processing technology.[26]

It would not be surprising if, in the future, HP announces more sustainability success stories that are driven by AI. AI sustainability is a topic that thought leaders at the company write about on its blog;[27] this site discusses the latest trends in technology.

CONCLUSION

As more consumers demand sustainable products and are willing to pay for them, marketers need to prove how their brands are becoming greener. AI allows brands to become more transparent and tell a story about how they are curbing their environmental impact. Leveraging AI, brands can now communicate with their customers and prospects on how they are leveraging technology to become greener.

Enterprise tech brands have started this trend of using AI in sustainability initiatives, but more traditional and smaller companies typically take more time to follow suit.

Cost is one of the biggest barriers for companies to invest in AI technology and sustainability initiatives. In the short term, it is expensive to adopt AI technology, and return on investment (ROI) is sometimes difficult to prove. Companies must focus more on the long-term benefits of becoming more sustainable and how AI can be part of that transformation. Brands need to internally sell the long-term potential of AI, invest in relevant solutions, and communicate those new initiatives to their customers as a marketing differentiator.

References

1. Provoke Insights (October 2022), 'Fall 2022, winter 2023 trends', available at https://provokeinsights.com/fall-2022-winter-2023-trends/ (accessed 18th November, 2022).
2. *Ibid*.
3. IBM (September 2021), 'Consumers want it all: Hybrid shopping, sustainability, and purpose-driven brands', available at https://www.ibm.com/downloads/cas/YZYLMLEV (accessed 18th November, 2022).
4. Fantozzi, J. (November 2022), 'How Tech Helps Restaurants Go Green — and Save Green', Nation's Restaurant News, available at www.nrn.com/operations/how-tech-helps-restaurants-go-green-and-save-green (accessed 18th November, 2022).
5. Kamin, D. (October 2022), '"Fast furniture" is cheap and Americans are throwing it in the trash', *New York Times*, available at https://www.nytimes.com/2022/10/31/realestate/fast-furniture-clogged-landfills.html (accessed 18th November, 2022).
6. Stokes, L. (April 2020), 'How interest groups shape U.S. clean energy policy', Kleinman Center for Energy Policy, available at https://kleinmanenergy.upenn.edu/podcast/how-interest-groups-shape-u-s-clean-energy-policy/ (accessed 18th November, 2022).
7. Office of the Federal Chief Sustainability Officer, 'Federal sustainability plan', available at https://www.sustainability.gov/federalsustainabilityplan/#:~:text=Through%20the%20Federal%20Sustainability%20Plan,light%2Dduty%20acquisitions%20by%202027 (accessed 18th November, 2022).
8. European Commission, 'A European Green Deal', available at https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en (accessed 18th November, 2022).
9. United Nations, 'For a livable climate: Net-zero commitments must be backed by credible action', available at https://www.un.org/en/climatechange/net-zero-coalition (accessed 18th November, 2022).
10. Wollmert, P. (2022), 'Sustainability reporting: What to know about the new EU rules?', EY, available at https://www.ey.com/en_gl/assurance/how-the-eu-s-new-sustainability-directive-will-be-a-game-changer#:~:text=The%20EU%20is%20set%20to,on%20people%20and%20the%20environment (accessed October 2022).
11. PWC, Microsoft (2022), 'How AI can enable a sustainable future', p. 6, available at https://www.pwc.co.uk/sustainability-climate-change/assets/pdf/how-ai-can-enable-a-sustainable-future.pdf (accessed 18th November, 2022).
12. Insider Intelligence (October 2022), 'AI Software Spending Worldwide, 2021 & 2025 (billions)', available at https://chart-na1.emarketer.com/259300/ai-software-spending-worldwide-2021-2025-billions (accessed 18th November, 2022).
13. Hays, A. (August 2022), 'Reverse your reverse logistics strategy', Global Trade, available at https://www.globaltrademag.com/reverse-your-reverse-logistics-strategy/ (accessed 18th November, 2022).

14. Reiss, M. (March 2022), 'It's time to transform reverse logistics', Logistics Management, available at https://www.logisticsmgmt.com/article/its_time_to_transform_reverse_logistics#:~:text=Reverse%20logistics%20can%20no%20longer,of%20cost%20and%20sustainability%20impacts (accessed 18th November, 2022).
15. PWC, Microsoft, ref. 11 above. p. 20.
16. MIT Sloan Management Review and Boston Consulting Group (BCG) (September 2022), 'To Be a Responsible AI Leader, Focus on Being Responsible', available at https://web-assets.bcg.com/37/87/33f2ee9d4e2281e792472f4ec1bf/to-be-a-responsible-ai-leader-focus-on-being-responsible.pdf (accessed 18th November, 2022).
17. Insider Intelligence (May 2022), 'Decision-Makers in Select Countries/Regions Whose Companies Have Deployed vs. Are Exploring AI, April 2022', available at https://chart-na1.emarketer.com/256846/decision-makers-select-countriesregions-whose-companies-have-deployed-vs-exploring-ai-april-2022-of-respondents (accessed 18th November, 2022).
18. Stand.earth, 'Revealing The secret emissions of e-commerce', available at https://clean-mobility.org/wp-content/uploads/2022/07/SRG_Last_Mile-FINAL.pdf (accessed 18th November, 2022).
19. Sonos, 'Progress against climate change starts by listening better', available at https://sustainability.sonos.com/Sustainability-and-Climate-Impact/default.aspx (accessed 18th November, 2022).
20. Sonos, 'Giving back: Uplifting our Communities', available at https://sustainability.sonos.com/Giving-Back/default.aspx (accessed 18th November, 2022).
21. Saleforce, 'Net zero cloud,' available at https://www.salesforce.com/products/net-zero-cloud/overview/ (accessed 18th November, 2022).
22. Salesforce, 'MillerKnoll uses the information to inform its marketing, commerce, and service teams to provide and communicate to their consumers better products for the environment', available at https://www.salesforce.com/resources/customer-stories/how-millerknoll-computes-carbon-impact/?d=cta-body-promo-221#step3 (accessed 18th November, 2022).
23. Salesforce, 'Canadian technology company TELUS taps salesforce net zero cloud for emissions reporting', available at https://www.salesforce.com/news/stories/telus-taps-salesforce-net-zero-cloud/?d=cta-body-promo-220 (accessed 18th November, 2022).
24. Casale, P. (February 2020), 'How does artificial intelligence improve mapmaking?', TomTom, available at https://www.tomtom.com/blog/maps/artificial-intelligence-map-making/ (accessed 18th November, 2020).
25. Hewlett Packard (HP) (2021), 'HP sustainability impact report', p. 7, available at https://www8.hp.com/h20195/v2/GetPDF.aspx/c08228880.pdf (accessed 18th November, 2022).
26. Leigh, R. (2022), '7 data-based & artificial intelligence projects to help fight climate change', Earth.org, available at https://earth.org/artificial-intelligence-projects/ (accessed 18th November, 2022).
27. See, Hewlett Packard Enterprise, 'enterprise.net', available at https://www.hpe.com/us/en/insights.html (accessed 18th November, 2022).