

ARTIFICIAL INTELLIGENCE POWERED RETAIL

REALIZING
BIG DATA'S
POTENTIAL

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INTRODUCTION

Technologies commonly thought of as ‘artificial intelligence’—a sector in the retail market expected to hit over \$57 billion in revenue by 2030¹—have long been leveraged by researchers, governments, varying companies, and the cybersecurity sector.

Yet, it was only recently² that the public conversation began to swirl around its potential thanks to advancements in generative AI,³ specifically around augmenting existing processes⁴, making them more efficient, responsive, flexible, and ‘smart.’

AI for retail should be understood as an answer to a long-held problem: what exactly to do with all of the ‘Big Data’⁵ that is being collected and how to best utilize it? AI is a data collator, and it can do that job better than any other tool to date.

This has direct implications for how the customer journey is understood, and so, how to best improve the customer experience.⁶

Notes Tina Nelson, Principal Product Evangelist at Optimizely,⁷ “Having quick access to information is a key component in impacting your customer’s happiness and satisfaction...The end goal is to use

those insights to create an efficient and an enjoyable experience for your customers while helping your organization lower costs.”

Nelson continues to quote the World Economic Forum’s finding⁸ that “AI services are predicted to increase from 5 billion to more than 31 billion by 2028,” an exponential growth.

Furthermore, argues Emily Fridman, Design & Innovation Leader at Cognizant,⁹ AI is set to ‘supercharge’ customer personalization: “It’s going to both produce a vast amount of customer data in and of itself, and it’s going to be able to generate lots of personalized recommendations based on that data,” making for a ‘self-propagating’ recommendation and analysis system for retailers.

By collating the reams of data retailers can produce in their day-to-day operations, AI can provide insights, guidance, and even automate decisions to greater the potential of new data.

All of this is necessary because the retail climate is indisputably challenging¹⁰ over the course of 2023 and the years to follow.

Whether inflation,¹¹ the labor ‘crisis,’ ongoing changes in consumer behavior (the much debated¹² ‘death of loyalty’), continued supply chain and market uncertainty,¹³ the need for a competitive edge is preeminent.

The first port-of-call for businesses seeking that edge will increasingly be the smart implementation of AI services to facilitate the broader, long-standing trend of digitization and data-driven analysis.

Continues Fridman, it’s when AI allows us to bring all of that data together that retailers can unify their data silos and “move away from just trying to be ‘omnichannel’ and move toward truly intelligent in the way retailers can orchestrate customer experiences.”

It’s all part of an increasingly new normal, argues James Becker, Head of Business Development at

PayIQ,¹⁴ and one brick-and-mortar retailers need to catch up to:

“Brick-and-mortar has been at a disadvantage because of the lack of data they collect. They usually require customer ‘action’ to track data like engaging through a loyalty program, downloading and engaging through an app, or entering a phone number,” notes Becker, while eCommerce generally collects data just by analyzing browsing habits or by utilizing data hubs.¹⁵

Yet, it doesn’t have to be this way: with modern, advanced systems¹⁶ involved in everything from recommendations to floor tracking to payments, data is more accessible to brick-and-mortar retailers than ever before.¹⁷

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75.7%

of marketers are already
using AI tools for work.

according to a new analysis by **Authority Hacker**



AI is **Already Ready** to Rumble in 2023

Of course, many traditional retailers *are* already leveraging AI.

One of the most often *overlooked* improvements AI has brought to the table is in the augmentation and automation of several critical back-office functions, including business accountancy.¹⁸

Notes Sucharita Kodali, Vice President and Principal Analyst at Forrester Research, AI is today being used to optimize inventory via fulfillment analytics¹⁹ and markdown optimization, things Kodali argues are becoming fundamental to competitive retail in 2023.

“Data is best when plugged into a tool that can look at the inputs and generate an output that is the kind you’re looking for, whether that is the most sold for the cheapest price or highest margin, or the fastest delivery time,” Kodali continues, a function AI can and is providing.²⁰

In other words, AI algorithms can analyze historical sales data and cross reference patterns identified in that data with what it sees for current inventory levels and other factors such as weather, holidays, and so on to create optimizations and perform predictive analytics²¹ on a level human operators just wouldn’t have time for.

Similarly, price optimization involves the analysis of market trends and customer demand references against competitor pricing to dynamically tweak and ‘perfect’ pricing strategies in real time.

There’s also a growing opportunity for AI to manage supply chains, a function it is already being put to task on. According to a recent report by Forbes,²² one such example is Shopic,²³ a company aiming to make standard shopping carts into ‘smart carts’ that can track inventory levels while simultaneously providing data to improve store layouts.

Next are the ways in which generative AI is being used in retail, something which has seen explosive growth in the past year in a variety of industries, not just creative work.²⁴ Nearly *everything*, including *audio, code, images, text, simulations, and videos* that generative AI can produce²⁵ will only get better, in fact, and *exponentially*.

The impact is already there for marketing: according to a new analysis by Authority Hacker surveying 3,182 digital marketers, 75.7% of marketers are already using AI tools for work, 49.5% are using AI tools multiple times per week or more, and 69% of marketers are using ChatGPT specifically.



Image courtesy of Shopic

A Boon to Both Employees and Customers

Additionally, AI is already available to better design and implement training for new and existing employees, notes one report by Forbes, “AI can test a learner’s existing knowledge and adapt the learning journey to fit their individual needs.”²⁶

For example, forward-thinking businesses and retailers are already leveraging AI via virtual and augmented reality to create training scenarios for employees that will immerse them in tasks at potentially much lower costs and with no physical risk to themselves.

AI can also be used to personalize training regimes²⁷ by analyzing individual employee performance, identifying areas for improvement, and then utilizing machine learning to adapt training materials to meet the needs of each employee near instantly.

These all gel naturally with the improvements to the customer experience AI is already delivering. From virtual changing rooms powered by AI recommendations²⁸ to hyper-personalized experiences, and recommendations powered by the collation of available customer data.

That’s not to mention the use of chatbots and virtual assistants²⁹ both for training purposes and in customer interactions. For employees, AI can assist in filtering out simplistic questions and reduce the load on capacity while simultaneously providing real-time recommendations and solutions for customer interactions when they are necessary.

It can also assist in the prevention of fraud, using historical analyses and tremendous amounts of collated data to identify anomalies right down to individual behavior patterns it identifies in particular repeat offenders; AI is already a powerful tool in loss prevention.³⁰

Notes Trish Coleman, Director of Data & AI at Microsoft, “Generative AI can proactively look for anomalies and alert humans before they otherwise might have noticed that some kind of fraud might be going on. AI is really changing the game for IT security for retailers.”

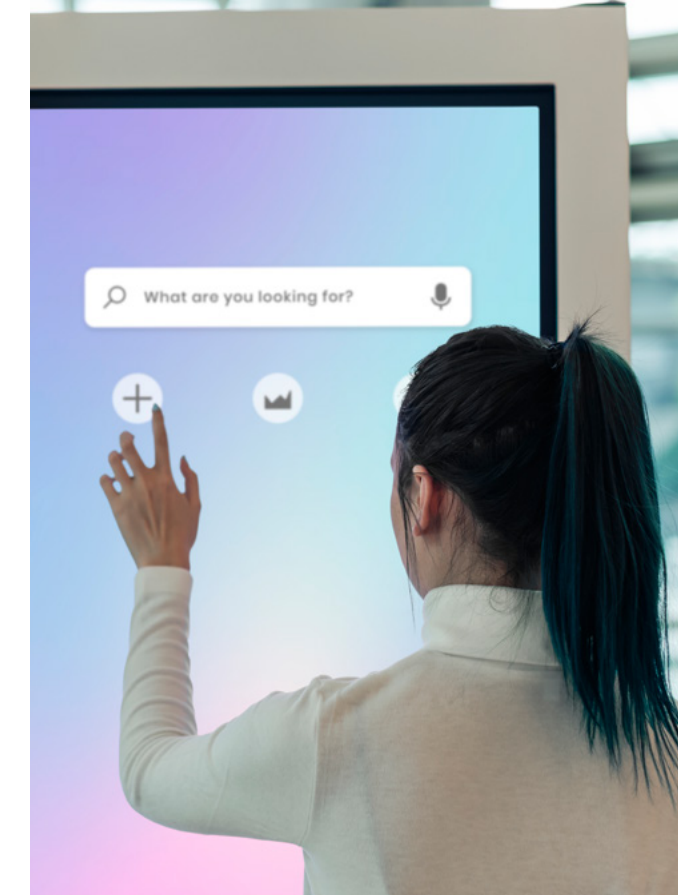
On the customer side, those chatbots and virtual assistants are instrumental in conveying not just critical-yet-often-enquired-after information (think health regulations during COVID) but further personalized recommendations.

It can do all this in a way that is automated and does not require an interaction with a store associate, yet is all the same dynamic, outreaching, conversational, and interactive.³¹

To the degree that this affects customer loyalty: continues Coleman, “The more you can provide an interface that is natural and human-like for your customers, the more satisfaction they’re going to have, the more loyalty they’re going to have.”

From frictionless AI-powered checkouts to the tracking of varying in-store activities to better identifying optimal product placements and promotions³² via advanced shelf monitoring, planogram compliance, deep learning, and computer vision, AI will make shoppers feel like the world revolves around them on their day out.

Continues Coleman, “The future of AI, in my opinion, is bright. Tools like ChatGPT³³ are going to change how we interact with everyone, but specifically for retailers, how they’ll interact with their customers and with their employees as well.”



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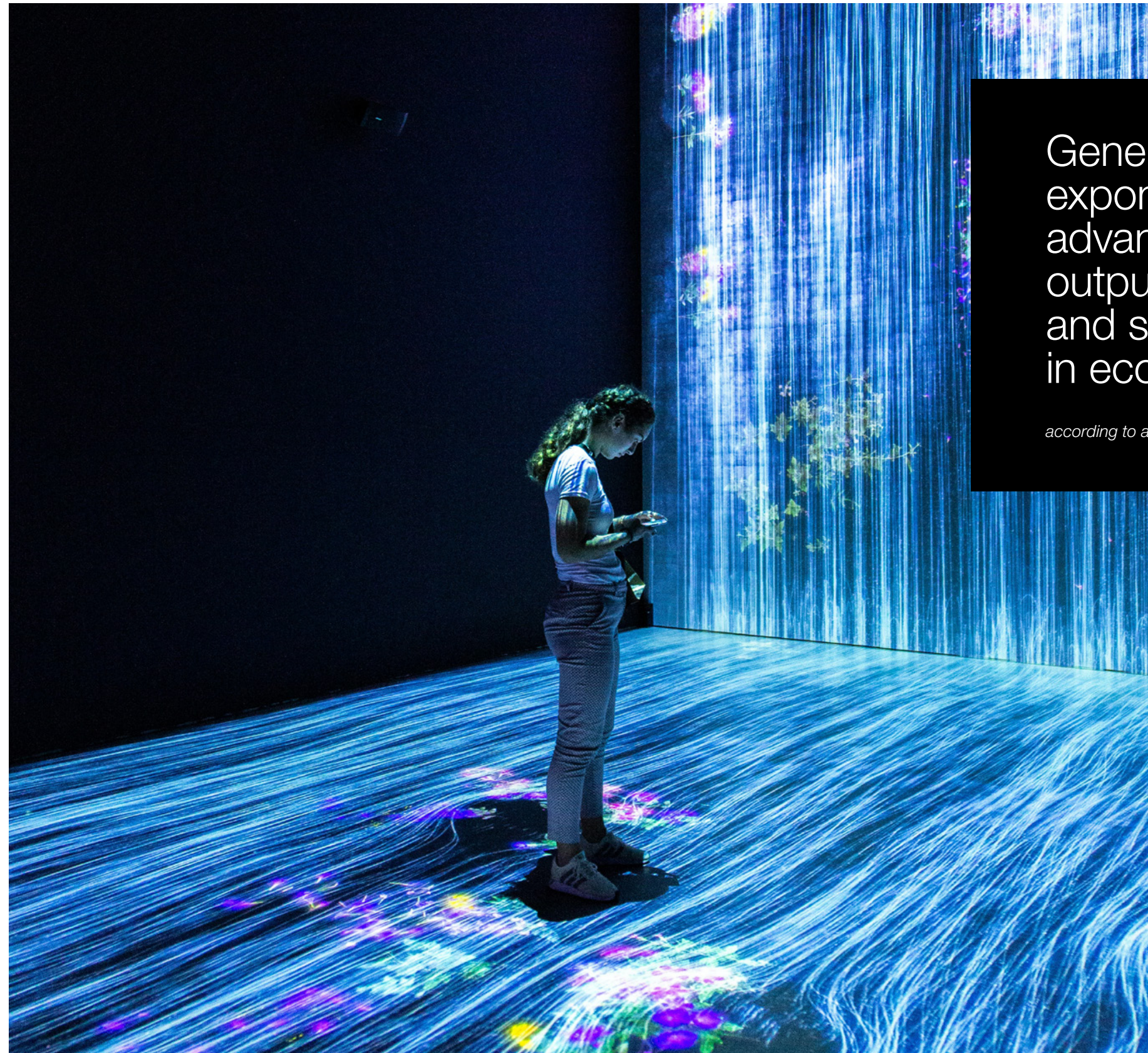


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Generative AI will continue to become exponentially more complex and advanced, continually improving its outputs through 2030 at a minimum and spurring a potential **\$15.7 TRILLION** in economic growth

according to an article by *Insider Intelligence*

The **Wild and Difficult-to-Predict** Future of AI

In a period that can only be compared to when computers first came onto the business scene in the 70s and 80s, AI presents an entirely new mode of technological advancement with implications that are difficult to understand.

In that sense, one of the easiest conjectures to make is simply that the technology is going to have an unprecedentedly tremendous impact.

Imagine, for example, increasingly advanced AI technologies managing entire supply chains,³⁴ not just monitoring individual shopping carts and store inventories, or being used to generate higher-and-higher levels of recommendations for major company decisions.³⁵

That's to not mention its increasing ability to *interact with humans in a way they can't immediately identify as artificial*,³⁶ something AI is only going to continue to improve on, and rapidly, whether that means generative faces and voices or the

act of simulating conversation well enough to fool unscrupulous audiences.

That returns us to generative AI. Generative AI will continue to become exponentially more complex and advanced, continually improving its outputs through 2030 at a minimum and spurring a potential \$15.7 trillion in economic growth.³⁷

“ AI should **still** be thought of as a ‘productivity enhancer,’ not a ‘replacement for human analysis.’ ”

Trish Coleman // Director of Data & AI at Microsoft

Notes Rasmus Hyltegård, Sr. Director of Advanced Analytics at Avanade,³⁸ generative AI’s ‘exponential nature’ means that it “won’t just be three times better” in a few years, but *vastly* better, such that it is difficult for us to get our heads around from the perspective 2023 grants us.

In other words, the scope of the change and the speed of its advancement³⁹ is such that within 7 years, AI is going to be used in ways and at scales that could redefine what we think of as a ‘revolutionary’ technology.

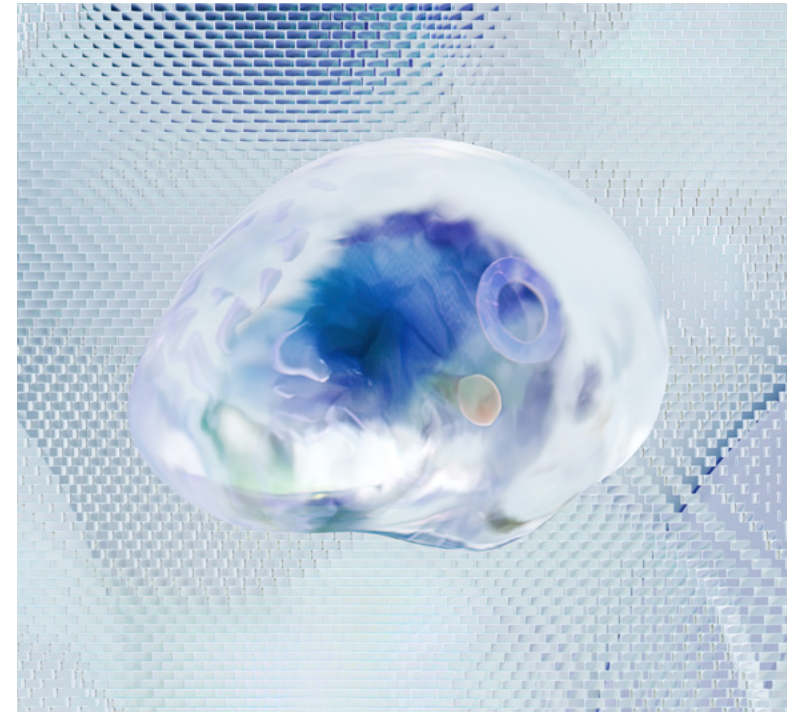
Of course, some think such projections are overblown: cautions an analysis from MIT Sloan Management Review, “Technology bubbles can pose difficult quandaries for business leaders: They may feel pressure to invest early in an



emerging technology to gain an advantage over competitors but don’t want to fall for empty hype.⁴⁰

Similarly, there are limitations to AI in the near future. Notes Fridman, “While AI is contextually aware, and it does make an effort to understand human emotions, it’s nowhere near the levels of nuance and inference that working with a real human would have.”

Putting it another way, while AI is indeed getting better at imitating human engagement, in a wide range of scenarios or protracted engagements,



AI is still very, very far off from replacing real human engagement. AI, despite its popular moniker, is not yet artificial intelligence,⁴¹ not *self-aware*.

Furthermore, while AI will be able to leverage data in increasingly complex ways, it can’t act on something it isn’t trained to act on,⁴² nor act where there is a lack of actionable data.

To this degree, AI should still be thought of as a “productivity enhancer,” not a “replacement for human analysis,” contends Coleman.

All the same, is it fair to call AI a technological bubble? Only time will tell, but AI is nonetheless set to be the greatest single technological market disruptor *ever*, only via a timeframe that is similarly not yet known.



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77%

of consumers agree that brands should ensure that **existing biases and systems of inequality** are not propagated by [AI]

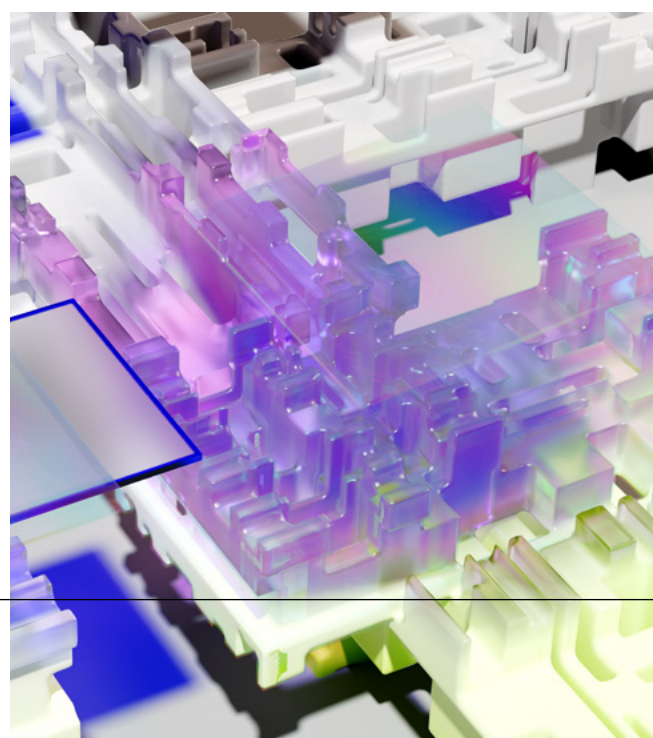
according to an analysis by **Dentsu**

Don't Underestimate Consumer Concerns on Ethics in **an AI-Powered Future**

According to an analysis by Dentsu,⁴³ “77% of consumers agree that brands should ensure that existing biases and systems of inequality are not propagated by [AI].”

Furthermore, “...over 70% of consumers believe brands should disclose when they use AI to develop products, services, experiences, and content. This suggests that consumers want brands to use AI in a way that is ethical, fair, and beneficial to society.”⁴⁴

In other words, much as consumers are increasingly concerned about brand responsibility for issues such as climate change, they're widely concerned about how AI is going to be used both for them and, they fear, potentially *against* them.




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OVER 70%

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according to an analysis by **Dentsu**

Bias is a valid and ongoing concern because the very way in which AI's are trained is an opportunity to introduce bias⁴⁵ even in very well-meaning and careful programmers.

Continues Hyltegård, "Because of how AI models are trained, they can sometimes produce unreliable, biased, or even inappropriate content. We need to be very clear about how we train and monitor the output and remove or filter out any unwanted outputs."

Additionally, generative AI is prone to mistakes,⁴⁶ both a technical limitation and an ethical concern. Argues Kodali, "There are absolutely a number of limitations, in particular with generative AI. The list is quite long. It's everything from fake information to copyright violations to the fact that you are potentially displacing people's jobs, people who have no plan B."

In that sense, Kodali further councils caution: "Think through AI adoption carefully and in very

small, measured experiments without being overly optimistic that something is going to transform your business."

Through all of this, however, business leaders should remember one thing: fear does you no good.

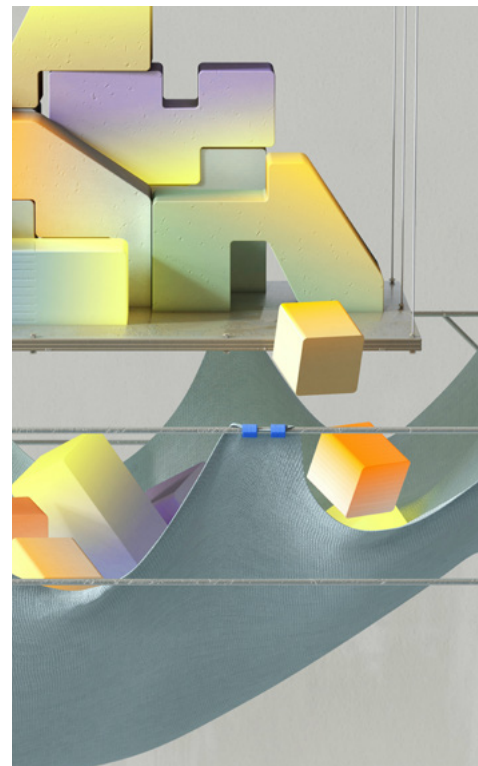
AI is indeed a sea change, a truly momentous technological advancement, and what it yet means for us all is very much unknown in the long term, yet is reason to believe you should implement AI into your models in a well-reasoned, strategic capacity.

The future *is* bright for AI, and it can be bright for retailers as well with the right partners and the right strategic mindset, but the time to have your eyes open to it is *now*, to say the least.



“ **Because of how AI models are trained**, they can sometimes produce unreliable, biased, or even inappropriate content. We need to be very clear about how we train and **monitor the output and remove or filter out any unwanted outputs.**”

Rasmus Hyltegård // Sr. Director of Advanced Analytics at [Avanade](#)









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