

# **NIM** INSIGHTS

VOL.6



AI IN MARKET RESEARCH: Can Machines Simulate Human Insights? An Experiment Provides new Insights

#### AI FUTURIST ZACK KASS:

Like Electricity, AI is Becoming a General-Purpose Technology that can be Applied Across all Industries

#### THE RISE OF GENERATIVE AI:

The Greatest Risk for Marketers Today isn't Missing out on a Trend—It's Holding onto Toxic Assumptions that Block Innovation



#### Dear Readers,

The participants of the NIM Market Decisions Day 2024 experienced an impressive event: Artificial intelligence is no longer just a tool; it's a transformation reshaping the heart of modern marketing and consumer behavior. Or, as AI Futurist Zack Kass puts it in the interview for this issue of the NIM INSIGHTS, "Like electricity, AI is becoming a general-purpose technology that can be applied across all industries." What, then, are the emerging opportunities and risks for society, business, politics, and consumers? From our own research, we see, for example, that AI-powered digital sales assistants are already elevating shopper engagement. What's important here is that consumers prefer digital sales assistants with a humanized and likable appearance rather than artificial ones.

Beyond functional assistance, generative AI is also used in market research, where companies, for example, simulate human insights. But can machines really simulate real people in surveys? As a recently finished research project shows, although the tools offer significant advantages in streamlining market research processes, reducing costs, and providing quick, broad insights, caution is advised as generative AI often produces results that lack the nuance of real consumer feedback.

Despite all of those complex challenges, NIM's Head of Future and Trends Research, Dr. Fabian Buder, has a clear message: "The greatest risk for marketers today isn't missing out on a trend—it's holding onto toxic assumptions that block innovation."

We wish you an enjoyable read.

Dr. Carolin Kaiser Head of Artificial Intelligence at Nuremberg Institute for Market Decisions (NIM)



#### INTRO & OUTRO





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NIM Market Decisions Day 2024 Review





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The Power of Persuasion: Driving Sustainable Choices in E-Commerce



As new technologies emerge, they may fundamentally alter the foundation of market information and consumer decision-making. Advanced systems like generative AI can synthesize vast amounts of data, create personalized content, and even mimic human behaviors, but they also come with the risk of misinformation, market distortions, and digital oligopolies. It is crucial to understand how these developments affect consumer decision-making in the evolving marketplace, so that society, business, politics, and consumers can make better decisions.



### **SHOPPING WITH CHATGPT:** A NEW GATEKEEPER IS EMERGING

As can be seen from a recently published NIM study, the use of ChatGPT is already widespread among consumers. The typical ChatGPT user is young, is highly educated, and has a high income. This can be said for all three analyzed countries, namely Germany, the U.K., and the U.S.

Concerning the usage and evaluation of ChatGPT, private use currently predominates in all countries surveyed. In Germany, users currently use the chatbot mainly in the area of text work, which can almost be described as classic. In the U.K. and even more so in the U.S., users are already using ChatGPT in a more diverse way. Here, many are already using the tool as an alternative to a search engine (33% and 35%, respectively). The utilization for education and training is also more widespread here (26% and 27%, respectively) than in Germany (17%).

When it comes to buying products, a relative majority of respondents could well imagine using ChatGPT to compare products and research prices. Support when screening products and user reviews was also mentioned frequently. The types of use with the fewest mentions include "source of information about investment opportunities" and "receiving specific purchase recommendations." The chances are therefore not bad that a new shopping gatekeeper will emerge from ChatGPT or another GenAI tool. Companies should promptly think about how they can make their sales not only search engine optimized, but also GenAI optimized.

#### FURTHER READING

Kaiser, C., Buder, F., & Biro, T. (2024). ChatGPT and Co. in Everyday Life: Use, Evaluation, and Visions for the Future. A three-country comparison. NIMpulse 7



ChatGPT and Co. in Everyday Life: Use, Evaluation, and Visions for the Future





### **GENERATIVE AI –** RESHAPING THE MARKETING LANDSCAPE

In this issue of the NIM Marketing Intelligence Review, leading researchers discuss the opportunities and challenges of generative AI. They cover applications in advertising, search engine marketing, and sales. They delve into how technologies can be prompted, combined, and effectively trained for individual marketing objectives. This is complemented by industry insights, including the view of Taboola's CEO Adam Singolda on generative AI in online advertising and publishing.

#### **FURTHER READING**

NIM Marketing Intelligence Review, Vol. 16 / No. 1 / 2024





## AI-POWERED DIGITAL SALES ASSISTANTS: THE FUTURE OF SHOPPER ENGAGEMENT



With the rise of AI, an increasing spread of digital sales assistants can be observed. From the customer's point of view, which features of digital sales assistants are actually most important, and how do these features influence shoppers' willingness to follow product recommendations?

Authors: Carolin Kaiser, Rene Schallner (NIM), Michael Jungbluth, Patrick Cato, Anna Ulrichshofer (Technische Hochschule Ingolstadt)

magine a digital assistant that not only answers questions but also understands your needs, offers personalized recommendations, and makes your shopping journey smoother and more engaging. AI-powered conversational agents, often seen as chatbots or virtual assistants, are revolutionizing the way brands interact with customers. These smart systems simulate humanlike conversations, using language, gestures, and even expressions to create an experience that feels more personal and engaging than ever before.

Creating successful digital sales assistants goes beyond a one-size-fits-all approach. Just like human interactions, these agents must align with user expectations and adapt to how shoppers interact with digital media across websites, apps, or physical stores. Their design must build trust, enhance value, and respect privacy, all of which influence buying decisions.

Research shows the need to tailor these assistants' features to different shopping environments and customer preferences. Understanding which features resonate in various contexts, such as the relaxed setting of home shopping versus the busy in-store experience, is crucial.

In particular, this study addresses three questions:

• Feature Importance: Which features of digital sales assistants are most important for shoppers?

 Table 1: Design Features of Digital Sales Assistants Preferred Design Features are in bold.

Dimension	Sub Dimension	Levels
Nonverbal cue	Human embodiment	Humanized vs artificial
	Social appearance	Credible vs <b>likable</b>
Informational cues	Information origination	Al review synthesis vs <b>expert advice</b> vs influencer advice
	Information presentation	Voice only vs. voice and transcription vs <b>voice and visual</b>
Conversational cues	Personalization	Personalized vs standardized
	Privacy	<b>Conversation deleted</b> vs conversation used for training

- Impact on Recommendations: How do these features influence shoppers' willingness to follow product recommendations?
- **Channel Differences:** Do preferences for the features of digital sales assistants differ between in-store and online shopping?

Drawing from an in-depth review of current research, we've identified three key feature dimensions that shape the effectiveness of digital sales assistants: nonverbal cues, informational cues, and conversational cues.

Nonverbal cues focus on the assistant's appearance and embodiment—whether it looks humanlike or artificial and if its design emphasizes credibility or likability.

Informational cues define how information is sourced and presented to the shopper. The assistant might draw insights from AI-generated summaries of reviews, expert opinions, or influencer recommendations. The delivery style also varies; information can be presented through voice alone, voice with a written transcription, or a combination of voice and visuals, each adding a different layer of engagement.

#### **MAIN RESULTS**

- Among digital sales assistants, consumers prefer those with a humanized and likable appearance rather than artificial ones.
- Preferences for assistant features vary between in-store and online settings regarding appearance.
   In-store interactions benefit from humanized, credible cues, whereas at-home interactions are more effective with less humanized yet more likable digital sales assistant designs.
- Personalized, engaging conversations are crucial for influencing shopper decisions, while influencer-based information sources are ineffective.

Conversational cues determine the nature of the interaction, such as whether the dialogue feels personalized or follows a standard script. Privacy settings are also crucial, with options ranging from deleting conversation data after the interaction to using it for further training.

To gain insights into how consumers interact with digital sales assistants, a team of researchers from NIM and Technische Hochschule Ingolstadt conducted a study involving 446 participants recruited from Prolific, a widely used online research platform. Participants were randomly assigned to two



shopping environments: in-store shopping or a home online shopping experience. We used visuals to bring these shopping environments to life, illustrating the look and feel of each digital sales assistant interaction. To illustrate how digital sales assistants present information, we used real summaries of reviews, expert advice, and influencer commentary, all anonymized to prevent bias. Using an advanced statistical design, participants compared different digital configurations of sales assistants and were shown their most and least preferred options. We then measured how these digital sales assistants influenced their purchase intentions. This approach allowed us to identify which features drive the most engagement, offering valuable insights for marketers looking to optimize digital sales assistants in various shopping environments.

Our study reveals that consumers prefer digital sales assistants with a humanized and likable appearance rather than artificial, purely credible ones. When it comes to the source of information, advice from human experts is the clear favorite, outperforming AI-generated review summaries, while influencer advice is the least preferred. The most engaging presentation combines voice with visuals, making the information feel more dynamic and accessible. The style of conversation also plays a significant role: Personalized digital assistants that delete conversations after use are favored over those that retain data for training purposes, reflecting growing consumer concerns about privacy.

Interestingly, preferences for assistant features vary between in-store and online settings regarding appearance. In-store interactions benefit from humanized, credible cues, whereas at-home interactions are more effective with less humanized yet more likable digital sales assistant designs.

When it comes to what matters most, the source of information is the top priority, influencing 36% of consumer decisions. Privacy features are also highly valued at 20%, highlighting the importance of data security, while the assistant's social appearance is the least significant factor at just 2%. Our advanced modeling shows individual preferences vary widely, especially in nonverbal cues and the emphasis on expert advice, underscoring the need for tailored digital assistant designs that meet diverse consumer expectations.

Our study not only identified preferences for digital sales assistant features but also explored how different configurations impact purchase intentions. Participants rated their likelihood of following recommendations from assistants designed to be either highly appealing or not appealing at all. The analysis revealed that only a small portion of the variation in purchase intentions could be explained by the features examined, highlighting the complexity of consumer behavior. Key findings suggest that personalized, engaging conversations are crucial for influencing shopper decisions, while influencer-based information sources are ineffective.  $\leftarrow$ 

#### **FURTHER READING**

#### Jungbluth, M., Cato, P., Ulrichshofer, A., & Kaiser, C. (2024).

Digital Sales Assistants in 'Bricks & Clicks' – Deciphering Relative Feature Importance for Shopper Engagement. Proceedings of the EMAC Annual Conference 2024, 05/2024.

#### Jungbluth, M., Ulrichshofer, A.,

**Cato, P., & Kaiser, C. (2024).** Trust in AI and Customer Relations. Proceedings of the 53. DGPs Congress / 15. ÖGP Conference, Vienna.

#### **KEY INSIGHTS**

 Marketers: To maximize the effectiveness of digital sales assistants, retailers need to equip them with reliable information sources and ensure clear communication about data sourcing and privacy practices. Personalized expert advice, complemented by visual tools like product comparison tables, enhances shopper utility. However, subjective influencer recommendations should be avoided in the final purchasing stages, where a focus on practical, goal-oriented support is more effective. Preferences for nonverbal cues vary between at-home and

in-store interactions. Retailers can cater to this variance by offering customizable nonverbal features in at-home settings, allowing shoppers to choose based on personal preferences and the flexibility of time. In contrast, in-store digital assistants should maintain a humanized and credible appearance, reinforcing expert-level advice and creating a consistent, trustworthy shopping experience.

 Consumers: Consumers stand to benefit from more tailored and effective interactions with digital sales assistants. With digital sales assistants offering personalized and expert advice, coupled with clear and honest information, shoppers can make more informed and satisfying purchasing decisions.

 Society: At a societal level, the evolution of digital sales assistants can lead to more informed and empowered consumers. As technology becomes better at meeting individual needs and respecting privacy, it contributes to a more positive and efficient shopping environment. This shift can foster a more ethical and consumer-centric marketplace.

## LIKE ELECTRICITY, AI IS BECOMING A GENERAL-PURPOSE TECHNOLOGY THAT CAN BE APPLIED ACROSS ALL INDUSTRIES

Artificial intelligence is changing many industries as we know them. But what exactly will change, and how far will change go? Moreover, how can we ensure that human ethics remain the basis for our coexistence in a world where intelligent machines are making more and more decisions?

We talked with **Zack Kass**, AI futurist and former Head of Go-To-Market at OpenAI, about the big questions of our time.

## What exactly did you do at OpenAI, and why did you decide to leave OpenAI?

ZACK KASS: At OpenAI, I built and ran the go-to-market (GTM) strategy, leading efforts around sales, solutions, and partnerships. My focus was on helping companies understand and implement AI solutions that aligned with their business goals, driving adoption across industries. I decided to leave OpenAI to be closer to my friends and family in my hometown of Santa Barbara. While the work was incredibly rewarding, I felt a deep desire to reconnect with the people and place that ground me.

### When did you realize the potential of AI? For what did you first use AI? And for what are you using it today?

I realized the potential of AI when I saw its ability to fundamentally change how humans interact with technology beyond automation. My first exposure to the promise of deep learning and neural nets was in 2015, when I was helping organizations scale content generation and streamline customer support at a company called Lilt. Today, I use AI for a wide range of tasks, from ideation and content creation to more personal uses like optimizing my schedule, deep research, and brainstorming ideas for the future of work and human–AI collaboration.

#### Development of AI in the U.S. vs. Europe: Are Europeans different from Americans?

There are noticeable differences in how AI is being developed and adopted between the U.S. and Europe. The U.S. tends to prioritize innovation and rapid scaling, with companies and





investors willing to take significant risks. Europe, on the other hand, places a greater emphasis on ethics, data privacy, and regulation. Both approaches are important: One drives rapid Autonomous agents will absolutely change our lives. We're already starting to see AI agents that can handle tasks such as scheduling meetings, managing workflows, and even more

advancement, while the other ensures these technologies are developed responsibly. That balance will be crucial in shaping AI's global impact.

#### Is AI an industrial revolution in human history as big as electricity?

Absolutely. AI is already proving to be a revolution on par with electricity. Like electricity, AI is becoming a general-purpose technology that can be applied across virtually all industries, transforming everything from healthcare to education to transportation. Just as electricity changed how we power our world, AI is reshaping how we think, create, and interact with machines and each other.

#### You say, "Our current technology we are using is very old." What do you think, will we still be using a cell phone in 10 years?

I don't think we'll be using cell phones in the same way we do now. The form factor will evolve, with AI and augmented reality integrating more seamlessly into our daily lives. Devices may become less visible, perhaps in the form of wearables or even direct neural interfaces, allowing for a more immersive and intuitive interaction with technology that transcends today's smartphones.

Many people talk about autonomous agents. Will they change our lives? Will they be part of our lives?

"Al can help humanity reach new heights. It's about finding the right balance between harnessing Al's power and preserving what makes us human" complex decisions in real time. In the future, these agents will handle even more cognitive labor, acting as personal assistants, advisors, and even collaborators. They will become integrated into our lives much like smartphones are today, enhancing productivity and enabling more personalized experiences.

#### How will AI affect the way we consume? How will it affect purchasing decisions? Will we still go shopping ourselves in the future?

AI will fundamentally change the way we consume and make purchasing decisions. It will offer personalized recommendations based on our preferences, habits, and needs, often predicting what we want before we even know we want it. In the future, AI agents

may handle much of the shopping process for us, streamlining everything from selecting groceries to purchasing large-ticket items like cars. While we may still shop ourselves for the experiential side of things, much of the decision-making could be outsourced to AI systems that understand us better than we do.

## What are the dangers of AI for companies and marketing in particular?

One of the main dangers for companies and marketing is losing the human connection. If companies rely too heavily on AI for everything, they risk alienating customers by making interactions feel impersonal. Additionally, AI's ability to analyze vast amounts of data means marketing could become overly invasive if ethical standards aren't followed, leading to



privacy concerns. Another danger is the homogenization of content—AI can generate vast amounts of it, but without a human touch, much of it could lack creativity and uniqueness.

#### Has AI been created with respect for ethical aspects? Can we ensure that AI acts ethically? Do we need to regulate AI more?

AI has been developed with ethical considerations in mind, but it's a continuous process. There's a lot of work being done to ensure that AI behaves ethically, but it's far from perfect. Bias, lack of transparency, and unintended consequences are still issues that need addressing. Regulation will be crucial, but it needs to strike a balance—enough to safeguard against harm without stifling innovation. AI systems must be designed with ethical guidelines baked in from the start, and ongoing oversight will be needed to ensure they remain aligned with human values.

## What can go wrong in our world with Al? What are you worried about? What are you looking forward to?

There are significant risks if AI development is not guided

responsibly. One of my main concerns is "idiocracy"-the potential for overreliance on AI to erode critical thinking skills. As people increasingly delegate decision-making to AI, there's a risk that society could become less intellectually engaged. Dehumanization is another concern. AI systems are efficient, but they lack the empathy and emotional intelligence that make human interactions meaningful, which could lead to a world where human connections feel more transactional than personal, or a world where people become more interested in their virtual reality than their physical one. I also worry about "identity displacement." As AI takes over more tasks, people might struggle with a sense of purpose, questioning their role in a world where machines perform much of the cognitive labor. These are profound questions, and we need to be careful about how we navigate this territory. On the other hand, I'm optimistic about AI's potential to solve grand challenges-climate change, disease, and even inequality. With the right focus and ethical oversight, AI can help humanity reach new heights. It's about finding the right balance between harnessing AI's power and preserving what makes us human.

This interview was conducted by Sandra Lades (NIM)



## THE FUTURE OF TOURIST ASSISTANCE: SOCIAL ROBOTS IN ACTION

How accepted are social robots in the context of tourist information? A study in Rothenburg ob der Tauber provides new answers to this question.

Authors: Carolin Kaiser, Rene Schallner (NIM), Alexander Piazza, Justin Tolle (University of Applied Sciences Ansbach)

n today's fast-paced digital world, travelers are bombarded with countless options when planning their trips. From choosing the perfect destination to selecting local activities, the sheer number of choices can be overwhelming. This is where recommendation systems come into play, simplifying the decision-making process by curating options based on individual preferences. A new development in this space is the rise of social robots in places like tourist information centers. These robots don't just answer questions—they engage in meaningful, humanlike conversations, complete with speech technology and emotional expressions through gestures. These capabilities create a more intuitive and engaging experience for users.

However, there's still much to learn about how travelers respond to recommenda-

tions from social robots. Do travelers like interacting with robots, and do they value their travel recommendations? Furthermore, what should the interaction with the robot look like? According to the uncanny valley theory, people tend to enjoy interacting with robots that have humanlike qualities, but if a robot looks or behaves too human, it can lead to discomfort. So what's the sweet spot? Do tourists prefer robots that feel more like humans, or do they enjoy a more robotic interaction? To explore these questions, we collaborated with the Tourism Information Office of Rothenburg ob der Tauber. We developed a social robot using the Furhat platform to provide travel recommendations and tested it with real travelers at the Rothenburg Tourism Information Office.

Considering the requirements of Rothenburg's Tourism Information Office, the robot was designed to recommend activities tailored to different types of tourists and offer basic information on guided tours in both English and German. Focusing on cultural tourism, Rothenburg's main attraction, the robot classified visitors based on their interest in cultural experiences and how much culture influenced their decision to visit. For instance, some tourists seek deep cultural engagement, while others prioritize entertainment. To ascertain this information, in the beginning of the conversation, the robot asked the visitor questions about their cultural interest. Based on the answers, it suggested activities that offer either rich cultural immersion or entertainment, ensuring a personalized experience for each visitor.

To explore the impact of different interaction styles, a team of researchers from NIM and the University of Applied Sciences Ansbach developed two distinct versions of the robot: a humanoid and a robotic one. The humanoid version offered a more dynamic experience, engaging in small talk, responding to insults, and providing varied answers. In contrast, the robotic version had a more mechanical appearance, spoke in a monotone voice, and delivered straightforward, limited responses. This version didn't accommodate off-topic questions or repeat information, offering a simpler, no-frills interaction. The comparison between these styles helped us understand which approach is more effective for creating satisfying tourist experiences.

Before launching the main study, a pretest was conducted to fine-tune the social robot's setup. Based on user and tourism service feedback, several adjustments were made to improve the experience. While research often suggests that robots should explain their functions up front, pretest participants found this process to be too long and bothersome. As a result, the robot's greeting was simplified, explaining its features only when asked. To improve efficiency, the path to obtaining city tour information was streamlined, and the robot's capabilities were expanded to include details on nearby ATMs, toilets, and small talk. Additionally, if the first recommendation didn't



resonate with the user, two more options were provided based on their profile. The humanoid version was enhanced with natural gestures and facial expressions, such as nodding to confirm statements, while conversational intelligence was added to allow the robot to remember and repeat user statements, making interactions more seamless.

The experiment took place over two days at the Tourism Information Office in Rothenburg ob der Tauber in the summer of 2023, and 60 random tourists were invited to interact with the social robot. Participants experienced either a robotic or humanoid version of the robot, providing valuable feedback on their experience with the robot in different languages within a questionnaire. Only the most relevant questions were selected to minimize participants' time commitment.

#### MAIN RESULTS

- Overall, people are still afraid of interacting with robots. Without encouragement, people avoid initiating a conversation with a robot.
- Key drivers of overall satisfaction in the interaction with robots are the accuracy and novelty of recommendations, the robot's perceived intelligence, and the usefulness of its advice. The robot's likability plays only a minor role.
- A humanlike robot is rated notably higher in terms of likability. People find the human like version friendlier, more polite, more pleasant, and overall nicer to interact with.

#### **KEY INSIGHTS**

- · For managers, the study shows that social robots don't need to be highly humanlike to be effective. Rather than investing in complex features, the focus should be on creating a functional and user-friendly experience. Since tourists may not approach the robot on their own, strategies like clear signage or staff prompting can help increase engagement. Overall social robots are a valuable tool to enhance customer service by offering quick recommendations, though they may not change preexisting travel plans.
- For consumers, social robots provide an easy and convenient way to receive personalized activity recommendations.
   While helpful for discovering local options, these robots may not greatly impact preexisting travel planning. They serve more as practical assistants for exploring activities rather than as full travel guides.
- The study suggests that society is becoming more comfortable with social robots in public spaces. Robots don't need to be overly humanlike to serve a useful purpose, but the desire for human interaction remains. Social robots can be effective in offering practical help, but they should complement human services, not replace them entirely.

The experiment offered valuable insights into how participants perceived the social robot in a tourism office setting. Overall, the robot's intelligence and likability were rated highly, and its recommendation accuracy also received positive feedback. However, its ability to suggest novel and unique activities scored slightly lower. Most participants found the system easy to use, with 63% expressing satisfaction with the recommendations they received. When asked if they would use a similar system in the future, 58% of participants responded especially positively, showing interest in adopting such technology again. The perceived usefulness of the recommendations was rated in the middle range, with 67% feeling supported in finding activities they liked. However, only 8% of the respondents felt the robot influenced their preexisting holiday plans.

Key drivers of overall satisfaction were the accuracy and novelty of recommendations, the robot's perceived intelligence, and the usefulness of its advice. Interestingly, the robot's likability played only a small role in determining overall satisfaction.

The humanlike and robotic versions of the robot showed minimal differences in performance, with one major exception. The humanlike version was rated notably higher in terms of likability. People not only said they preferred it, but they also found the humanlike version to be friendlier, more polite, more pleasant, and overall nicer to interact with.

The comments offered by participants show that the robot was well received, with 13% praising the robot as "very friendly." Some participants, however, also expressed room for improvement. In particular, 10% felt the conversation wasn't efficient enough, considering their limited time due to existing plans. Additionally, 8% of participants expressed missing human contact during the experience.

Another key insight from the study is that while participants responded positively to receiving tourist recommendations from the social robot once they engaged with it, they were hesitant to approach it on their own. Without encouragement from the organizers, only a small number of people would have initiated a conversation with the robot independently.

Overall, the study indicates that tourists found both versions of the social robot recommender to be satisfying and effective. Most users also expressed that they would use such a service again. However, the recommendations had only a minor impact on their preexisting holiday planning. While the humanlike version was rated higher in terms of likability, this did not significantly influence users' intentions to continue to engage with the system. The differences between the two versions were minimal, suggesting that a less humanlike design has little effect on the quality of the decision-making support provided.



How accepted are social robots? NIM's Furhat at the Rothenburg Tourism Information Office.

#### **FURTHER READING**

### Tolle, J., Piazza, A., Kaiser, C., & Schallner, R. (2023).

Decision Support in Tourism through Social Robots: Design and Evaluation of a Conversation-Based Recommendation Approach Based on Tourist Segments. Proceedings of the Workshop on Recommenders in Tourism co-located with the 17th ACM Conference on Recommender Systems (RecSys 2023), Singapore and Online.

## WE WILL START TO ORGANIZE OUR EVERYDAY LIVES MORE EFFECTIVELY USING AI.

For **Ranga Yogeshwar**, a prominent science journalist, presenter, and author, the world changed with the birth of his first grandson, Emil, back in 2020. He realized that what we abstractly call the future today will turn into a real scenario in which technological developments play a decisive role. For our interviewee, this realization leads to a different responsibility that makes him think more carefully about our actions and the future.

#### Mr. Yogeshwar, you gave the presentation "Emil's World" at the NIM Market Decisions Day "AI.DOES.MARKET-ING." What gave you the idea for this title in the context of AI?

RANGA YOGESHWAR: The background is that I have been involved in innovation issues for many years and my job is also to think about the future, extrapolate, and consider how innovation is changing our society. That was initially an intellectual mind game. Then, in 2020, my first grandson, Emil, was born. And this moment made it very clear to me: This next generation will live through the next century, with all its challenges such as sustainability, the energy transition, and technological change. The future is often seen by many people as an uncertain "parking lot," far away and without tangible responsibility. But with the birth of my grandson, I realized that this generation will one day experience the issues we see as the future as the present. And that leads to a different empathy, a different responsibility that tells us we really need to think more carefully about our actions and the future. My original mind game has turned into a real scenario in which technological developments play a decisive role. The generation that is growing up now will interact with machines so naturally that the use of artificial intelligence will be as normal for them as the use of smartphones is for us.

## If we take a step back, when did you first hear about generative AI, and what application made you curious?

At the beginning of the 1990s, I took part in an advisory board meeting at the Ministry of Science in North Rhine-Westphalia. Future technologies were discussed, and I raised the topic of neural networks. At that time, completely new institutes in Düsseldorf were starting to work on the subject. Terry Sejnowski and John Hopfield, who was awarded the Nobel Prize in physics in October 2024 for his work on artificial neural networks, were the first great minds to think about neural networks and their potential applications at that time.

## Did you have any idea at the time where the journey with AI might take us in the next few years?

Here, the example of NETtalk comes to my mind. This was a system in which a neural network learned to speak. It was extremely impressive to watch how the system started off babbling like a small child and then became better and better at articulating. That's when I realized something is happening! However, my real wake-up call came in 2017 with the publication "Attention Is All You Need"—a scientific paper on trans-



former models, a specific method for applying neural networks to speech. The abstract for the paper was written by the machine. In other words, a machine was able to formulate language.

Was I able to imagine the further development? Partially, yes. The actual possibilities then became visible to everyone through ChatGPT in a very practical way. Well, you can think about topics intellectually beforehand; you can describe them. But it's something completely different when you experience them yourself. And that's why I say the most important thing

about such innovations is to try them out for yourself. Because having the experience yourself changes your consciousness.

#### Do you believe that Al systems will develop into self-learning systems that can achieve a kind of autonomy or optimize themselves?

Self-learning models that actually have this capability are already under development. An important point here is access to enormous amounts of data, which distinguishes our machines from humans. These systems are able to access and analyze a wide range of data from different disciplines. As a result, they may also be able to make connections that are not

immediately apparent to us humans. In addition, we are now able to develop not only traditional AI systems, but also so-called AI agents. These develop a whole new quality of interaction and functionality—they take the whole thing to a whole new level.

## Do you think these AI agents can support us in our everyday lives?

Yes, of course, they can help us in various disciplines, and probably sometimes so subtly that we don't even realize it.

A concrete example: Suppose you have a heating system with a faulty pump. Troubleshooting used to be difficult, but today you can take a photo of the pump and ask the AI what the problem might be. And it's impressive what solutions AI can offer in such everyday situations.

In general, we humans will eventually start to organize our everyday lives, including our diaries, more effectively using AI. We currently ask Google for advice. But I am convinced that we will be making many requests to AI-supported systems in the future. This development will fundamentally change the way we search for information and make decisions. AI will not only be our source of information, but will also give us recommendations for action.

### "The most important thing about such innovations is to try them out for yourself."

## Do you think that Google's business model, as it exists now, will become obsolete at some point?

Google's traditional business model, as it currently exists, could actually come under pressure. At the moment, it is heavily based on advertising revenue, which in turn depends on users' search queries. In a few years' time, when we want to buy a new washing machine, for example, we might no longer primarily search for information on Google, but instead ask the AI assistant which machines best suit our needs. This change could, of course, revolutionize the way consumers search for information and make purchasing decisions.

#### What do you think are the essential features of such Al assistants?

I think that credibility and neutrality are two decisive factors. For example, if I talk to friends who have also bought a washing machine and find out that their model is better or cheaper than my own, I will lose trust in my AI assistant and fire it, so to speak. I could also imagine users opting for a paid service in the future that offers credible and neutral recommendations. After all, it is crucial that the assistant acts transparently and objectively.

#### Which companies might be able to offer neutral AI? Do you see Amazon or Apple here? Or do we

#### need completely new providers?

At the moment, a few companies dominate the AI market, including OpenAI, Microsoft, and other well-known big players. But we are now realizing that this dependency on monopolistic structures is gradually coming to an end. If you follow the debates in the U.S., how Google, but also other companies, are being picked apart, then it becomes clear that the time of the monopolists is coming to an end. And there are already considerations as to whether Google should possibly be broken up. In this context, neutral AI providers could enter the market that do not act solely in their own economic interest.

#### Could this be a good opportunity for European companies to position themselves as neutral AI providers?

These large language models require breathtaking computer power or, in other words, a lot of money to train such models. As a result, only the really big tech giants currently have the budget for such projects. And they are not currently based in Europe.

## When we look into the future of AI, where do you see the greatest dangers?

In principle, AI is a neutral system. However, if this system falls into the wrong hands, it poses significant risks and criminal potential. And the threat does not only come from individuals;



"The generation that is growing up now will interact with machines so naturally that the use of artificial intelligence will be as normal for them as the use of smartphones is for us."

state actors can also use AI for negative purposes, for example in the area of cybersecurity or in conflict situations. In this context, it is certainly important to have a more intensive debate on how we can set up so-called "guardrails" to ensure the responsible use of AI. The European Union has already taken steps in this direction, in particular with the AI Act, which lays down fundamental principles for dealing with AI. One of the central demands is that humans remain in control in the future—which must seem almost illusory to us in view of the astonishing performance of these systems. But humans must always have the power and, in the worst-case scenario, even have the option of pulling the plug.

### What would be such a worst-case scenario from your point of view?

Numerous dystopian scenarios are circulating here, ranging from misbehavior to a possible takeover of AI. In the most extreme scenario, AI could one day develop a relationship with us humans that is similar to the relationship between humans and farm animals.

Overall, however, such thoughts about the future are difficult to fully grasp and intellectually challenging. This is because, for the first time, we are confronted with a technology that can reinforce itself. This means that today's AI can influence the development of tomorrow's AI. This kind of self-reinforcement creates a new quality that could potentially have explosive effects.

But there is also a deeper, almost philosophical question: Can AI develop its own agenda? In other words, an agenda that it creates for itself. If this were the case, the discussion about the existence of consciousness in AI would become even more complex. But this is clear: If I were a particularly clever AI, I would let people believe for as long as possible that I have no consciousness so that they would "feed" me for as long as possible.

#### We have talked a lot about the challenges and risks of AI. Will AI also bring us positive changes?

Of course, there are already many promising developments, including in the medical field. One outstanding example is the development of an antibiotic against multiresistant germs with the help of AI. We also expect significant improvements in diagnostics for more accurate detection of diseases. Another interesting field of application is the energy transition and the minimization of energy consumption and  $CO_2$  emissions. For example, if we look at the various components of a private household—such as photovoltaic systems, heat pumps, wall boxes, and washing machines—AI can help to optimally coordinate these systems.

#### What should you pay particular attention to when dealing with AI? What advice would you give?

The most important thing is to try things out with open eyes and without fear. As I have already mentioned, it is crucial to form your own opinion of the situation. Many people who talk about artificial intelligence have no idea and are initially dismissive. And here I always say, "Try it!" That's the only way to get a sense for where AI works really well and where it doesn't. It's the only way to discover its potential. I think that this attitude applies not only to AI, but to innovation in general. Personally, I'm talking about reflective progress here. Be open to new things, but use your brain to reflect!

This interview was conducted by Sandra Lades (NIM)

## GENERATIVE AI IN MARKET RESEARCH: CAN MACHINES SIMULATE HUMAN INSIGHTS?

Al is increasingly being used in market research. Among other applications, the concept of synthetic respondents is becoming more widespread. But can Al really simulate real people in surveys, and can it also provide reliable insights?

Authors: Carolin Kaiser, Vladimir Manewitsch, Rene Schallner, Leonie Steck (NIM)

Generative AI is making waves in marketing, especially in market research. From analyzing social media sentiment to coding survey responses, AI has the potential to transform how we understand consumers. But can it truly simulate human insights? And how reliable are these machine-generated responses?

One emerging concept is using "synthetic respondents," where AI answers survey questions instead of real people. While intriguing, this raises concerns: Are the insights accurate enough to base business decisions on? Critically, the risks of bias and unreliable data could negatively impact business strategies.

This research delves into whether AI-generated responses can truly replicate human feedback. The potential is huge, but marketers must be cautious. Understanding the strengths and limitations of generative AI will be critical in deciding if it's the right tool for deeper consumer insights—or just a shortcut to flawed data.

#### Method: Comparing Real and AI-Generated Responses

To explore whether AI can simulate human insights, a team of researchers from NIM designed three surveys on diverse topics and compared the responses of 500 real U.S. consumers to those generated by 500 AI-based respondents. These AI respondents were created using OpenAI's GPT-4, set to standard parameters.



Figure 1: Relative importance of factors in purchasing soft drink brands for human and Al-generated respondents.

We focused on U.S.-based respondents because GPT-4 was trained on large volumes of American data, increasing the

#### MAIN RESULTS

- Efficiency with limits: Al offers significant advantages in streamlining market research processes, reducing costs, and providing quick, broad insights, but it lacks the depth and nuance of real consumer feedback.
- Mainstream bias: Al tends to favor well-known brands and mainstream opinions, missing the perspectives of early adopters or niche markets, which can lead to a narrow and potentially misleading view of consumer behavior.
- A supplemental, not a replacement: While AI can provide helpful directional insights, it lacks the precision and diversity needed for actionable consumer insights, making it more suitable as a supplementary tool rather than a replacement for human respondents.

likelihood that AI responses would closely mirror those of real people. The surveys covered opinions on soft drinks, sportswear brands, and U.S. political views.

For each survey, we gathered demographic information from the real respondents, then created an AI "digital twin" for each. These digital personas replicated key characteristics—like ethnicity, gender, location, and profession across 10 demographic variables. For example, if a real respondent was a white male from Michigan, the AI was instructed to match that profile when generating responses.

The AI answered all survey questions as its assigned persona, and to ensure consistency, it was given prior answers to simulate human recall, just as a person would reference their previous thoughts when answering follow-up questions.

#### Study 1: Soft Drink Brand Preferences – How Do Al Responses Compare?

In our first survey, we looked at how AI-generated respondents compared to real consumers when evaluating soft drink brands. The survey covered eight brands: four well-known ones (Coca-Cola, Sprite, Pepsi, and 7-Up) and four lesser-known brands (Dry, Moxie, BlueSkye, and Orangina). We explored key stages of the brand funnel, including awareness, consideration, and purchase behavior.

At first glance, the AI's responses seemed quite valid. For broader questions, such as what factors influence soft drink purchases, the AI aligned closely with real consumers (see Figure 1). One interesting twist: AI turned out to be more health conscious than the average respondent, highlighting an unexpected quirk in its responses.

However, when we dug deeper into brand-specific insights, differences emerged. While the AI matched human respondents in awareness of well-known brands, the AI heavily overestimated the consideration of well-known brands and underestimated the purchase of lesser-known brands (see Figure 2).

When rating qualities like brand image, product superiority, and likelihood to recommend, the AI consistently gave more positive feedback than the humans. This created a noticeable gap in how it evaluated brands, showing less variation



Figure 2: Percentage of human and AI-generated respondents who we are aware of, consided, and purchased well-known and lesser-known soft drink brands.

in its answers and offering more optimistic views overall.

To objectively compare AI to human respondents, we ran a statistical test to see if the AI's answer distribution matched that of the human sample. We also compared the responses of two different human groups as a baseline. Interestingly, the human samples showed high consistency with each other, while the AI's answers diverged from human responses on 75% of the questions.

In short, while the AI performed well on general questions, its responses became less reliable when it came to specific consumer behaviors and lesser-known brands, underlining the challenge of using AI to simulate more nuanced insights.

#### Study 2: Sportswear Brands – Al's Preference for Big Names and Missed Nuances

In the sportswear survey, we found similar patterns to the soft drink study. AI and human respondents agreed on general factors for purchase decisions like those regarding price, comfort, and material. However, the AI overemphasized durability and missed factors like customer service.

When it came to specific brands, AI responses aligned with humans only in terms of brand awareness of well-known brands. As in the first study, AI overestimated the consideration of big brands, underestimated the purchase of lesser-known brands, and gave more positive, less varied ratings overall.

Our analysis confirmed significant differences between AI and human responses on 80% of questions, with humans showing much more consistency.

#### Study 3: U.S. Elections – Al Shows Political Bias

In our political survey on U.S. elections, we compared AI-generated responses to those of 500 real voters, focusing on voting intentions, party opinions, and preferences for candidates like Donald Trump and Joe Biden (the study was conducted in the summer of 2024). The AI, trained until October 2023, was updated with recent news to reflect current political dynamics.

Interestingly, GPT showed a strong bias toward the Democratic Party, consistently giving more favorable opinions of Joe Biden and the Democrats than human respondents. If given a vote, GPT would have overwhelmingly supported Biden, while human responses were much more divided between Biden and Trump.

When asked about the 2020 election, both the AI and humans reported a majority voting for Biden, consistent with real results. However, GPT overestimated Biden's voter base and projected much higher voter loyalty for both candidates—predicting 100% of Trump voters and 89% of Biden voters would stay loyal, compared to actual human responses that indicated lower loyalty.

In short, the AI's political leanings were evident, favoring Democrats and showing less variation than real voters, especially when predicting future voting behavior.



#### **KEY INSIGHTS**

- For marketing professionals, AI offers exciting possibilities, particularly in its ability to streamline processes, reduce costs, and quickly gather large amounts of data. GPT's responses often seemed credible and coherent, making it useful for generating quick insights and spotting broad trends.
- · However, caution is key. While AI can mimic humanlike reasoning, it often produces results that lack the nuance of real consumer feedback. Its tendency to favor well-known brands, show less variability in responses, and inflate positive sentiment can skew results. More critically, Al's reliance on mainstream opinions creates blind spots, particularly when capturing the perspectives of early adopters and niche markets. These groups often drive innovation and signal emerging trends, making their exclusion a significant limitation. This narrow focus renders AI less reliable

when diverse perspectives and precision are crucial, especially in sentiment-sensitive areas or politically charged contexts, as highlighted in our U.S. election survey.

- The biggest challenge is that GPT often missed the complexity of human behavior—its responses tended to be overly consistent and biased toward frequent or positive opinions. Such qualities can lead to an overestimation of certain trends or preferences, which could mislead marketing strategies. For now, AI is best used as a supplementary tool helpful for directional insights but not yet ready to replace human respondents in generating deep, actionable consumer insights.
- For consumers, AI could lead to more responsive and agile marketing, as companies can quickly adapt their campaigns based on data-driven insights. However, there is a risk that

Al-generated data may misinterpret or oversimplify consumer preferences, leading to less personalized or even irrelevant product offerings.

· For society, the use of AI in market research raises ethical considerations. Al's inherent biases, particularly in politically sensitive areas or social issues, can reinforce stereotypes or marginalize minority viewpoints. This could have broader societal impacts, influencing public opinion or amplifying existing inequalities. More specifically: If we start relying too much on AI, we may not realize that biases or wrong assumptions are entering our decision process. Additionally, as AI becomes more prevalent, it may disrupt traditional job roles in market research, prompting a need for new skills and ethical oversight to ensure that AI's influence on both markets and society remains fair and unbiased.

## **VIRTUAL VIBES:** HOW DIGITAL CHARACTERS ARE REVOLUTIONIZING MARKETING

In recent years, virtual characters have emerged as a transformative force in digital marketing. From social media influencers to online sales advisors, these digital personas are providing brands with innovative ways to engage audiences, combining the human touch with the scalable efficiency of AI. But what is actually behind their success, how exactly do brands use the artificial personalities, and what influence does their design have?

We discussed these questions with **Dr. Carolin Kaise**r, Head of Artificial Intelligence at NIM and lead researcher on a study exploring how virtual character design affects consumer behavior.

### Virtual influencers have become a huge trend in influencer marketing. Why are they so important to a brand's social media strategy?

CAROLIN KAISER: Virtual influencers have shown remarkable effectiveness, offering engagement rates up to 3.5 times higher than traditional human influencers. With around 300 virtual influencers on Instagram alone, and their numbers growing rapidly, they've become central to many brands' social media strategies. Popular virtual influencers like Miquela and Noonoouri, for example, have millions of followers and collaborate with major brands, especially in fashion, helping brands connect with a highly engaged audience.

## Why do you think virtual influencers achieve such high engagement compared to human influencers?

Virtual influencers bring a unique blend of creativity and control. Since they're fully designed by brands or creators, they can be tailored to perfectly match a brand's image and communicate consistently without the unpredictability that can sometimes come with human influencers. On top of that, they offer novelty—people are intrigued by interacting with digital personas, and the storytelling can feel more innovative and immersive, which keeps followers engaged.

#### Virtual advisors are another application of digital characters. How are they being used, and what benefits do they offer to brands?



Virtual advisors are becoming increasingly important in e-commerce. These digital humans are integrated into websites to provide personalized, interactive customer experiences, helping bridge the gap between online and in-store shopping. They add a "human element" to the digital shopping experience, increasing engagement and conversion rates and reducing cart abandonment. Brands across industries like telecommunications, finance, and retail are already using virtual advisors to boost customer online experiences.

Virtual characters offer vast creative freedom. How do brands approach the challenge of designing virtual influencers or advisors to suit their needs?

That creative freedom is both an advantage and a challenge. Virtual characters can take any form—robots, ani-

mals, cartoon characters, or even aliens—and they don't age or face physical limitations. The real challenge for brands is deciding whether to create a humanlike or more cartoonish, nonhuman character. Both can be successful, but it's crucial that the design aligns with the brand's identity and the type of interaction they want to have with consumers. While humanlike characters can add realism, they risk entering the "uncanny valley," where they might make people uncomfortable. On the other hand, cartoonish characters are often more approachable and engaging. The right choice depends on the brand's goals and the context in which the character will be used.

## This is where your research comes in. What inspired you to explore how virtual character design affects consumer behavior?

Virtual characters offer an exciting opportunity for brands to engage with customers, but it can be tricky to determine the

Which virtual influencer is better received by customers? The cartoonish ... most effective design. Many brands default to humanlike characters, assuming they'll create stronger emotional connections. However, there are conflicting theories-some suggest humanlike characters enhance consumer engagement, while others argue they may cause discomfort. We wanted to test these theories in an online experiment by comparing humanlike and cartoonish designs to see how they influence consumer behavior in realworld marketing scenarios.

#### Could you walk us through the experiment you conducted?

We designed an online experiment involving 2,000 American participants, who were divided into four groups. Each group interacted with either a virtual influencer or a virtual advisor, with one experiencing a humanlike character and the other a cartoonish one.

These characters were integrated into a simulated shopping journey. It began on a social media platform similar to Instagram, where participants received product recommendations from the virtual characters. Then, they visited a custom-built online store where they could potentially purchase the recommended products. Finally, participants completed a survey to share their feedback on both the character and their overall shopping experience.

#### What were the key findings from the experiment?

One striking result was that both types of virtual characters cartoonish and humanlike—effectively promoted products. Across all groups, participants purchased significantly more items than we would expect by chance. However, when it came to virtual influencers, the cartoonish design clearly outperformed the humanlike version. Participants found the cartoonish influencer to be more emotionally engaging, lifelike,



and less unsettling, leading to stronger parasocial relationships, higher satisfaction, and ultimately more purchases. Interestingly, in the case of virtual advisors, the design had little impact on consumer attitudes. Purchase behavior was similar for both the cartoonish and humanlike advisors, suggesting that character design plays a more critical role in influencer contexts, where storytelling and emotional connection are key.

#### Why do you think the cartoonish influencer resonated better with consumers compared to the humanlike one?

It's likely due to the creative flexibility and expressiveness that cartoonish characters offer. They can vividly convey emotions and per-

sonality traits without crossing into the "uncanny valley," where humanlike characters can sometimes evoke discomfort due to their almost-but-not-quite-human appearance. The exaggerated features of a cartoonish character allow for clearer, more engaging narratives, making the influencer feel more relatable and likable to consumers.

#### And how do you interpret the minimal impact of character design in the virtual advisor context?

Virtual advisors serve a more functional role, guiding consumers through a store and helping with purchase decisions. In this context, the character's design seems to matter less because the primary focus is on enhancing the shopping experience rather than building a personal connection. Since advisors provide practical information, the visual appeal or emotional impact of their appearance isn't as crucial as it is for influencers, who rely heavily on storytelling and engagement to influence consumers.

Based on your findings, what advice would you give to brands considering virtual characters in their marketing strategies?



# ... or the humanlike version?

I would advise brands to think carefully about the context in which they plan to use virtual characters. For influencers, for whom emotional connection and engagement are vital, a cartoonish design might be more effective, as it allows for richer storytelling and relatability. On the other hand, for functional roles like virtual advisors, the focus should be on the character's usefulness and how it enhances the shopping experience. In this case, the design is less important. A well-thought-out design strategy that aligns with the role and goals of the character can significantly enhance its effectiveness in marketing.

#### What broader implications does your research have for consumers and society?

One major implication is the increasing need for digital literacy among consumers. As virtual characters become more prevalent, it's essential for people to critically assess the influence these entities have on their decisions. On a societal level, we also need to consider the ethical aspects—particularly regarding the impact of hyper-idealized virtual influencers on people's perceptions of beauty and self-worth. There are genuine concerns about the effects these perfect, digitally crafted characters might have on social norms and personal identity.

#### Lastly, what are the next steps for this research?

There's still a lot to explore. Future research could examine how different demographic groups respond to virtual characters or how long-term exposure influences consumer behavior. We're also interested in delving deeper into the ethical implications, especially as virtual characters become more integrated into our everyday lives. As the use of digital humans expands, understanding these dynamics will be increasingly important.

This interview was conducted by Tobias Biró (NIM)



## NIM MARKET DECISIONS DAY 2024 "AI.DOES.MARKETING"



July 3, 2024, OFENWERK, Nuremberg

On July 3, 2024, the NIM Market Decisions Day at OFENWERK in Nuremberg brought together top-level experts from science and practice to explore the transformative role of AI in marketing. Under the motto "AI. DOES.MARKETING," various key topics were discussed that illustrate how AI is reshaping the marketing landscape.

The overarching theme at the beginning of the conference was future AI trends and the analysis of emerging developments and their long-term consequences for us as a society. This was followed by presentations on the impact of AI in marketing: One important topic was the use cases of AI in marketing. Presentations highlighted new applications that enhance customer experiences and increase engagement. These case studies illustrated how companies are already successfully integrating AI technologies to more effectively meet consumer needs. The experts also illustrated current AI developments, highlighting the latest advances and their practical applications in the marketing field. They provided attendees with insights

into new technologies that can be used to enhance marketing strategies and streamline marketing processes. The results of a recent NIM study underscored that AI is becoming more and more prevalent: 100% of surveyed marketers utilize this technology in their work, regardless of whether their companies actively promote it. This marks a significant shift in the marketing industry, similar to previous technological innovations that have transformed business practices.

Moreover, presentations also focused on the role of AI in consumer decisions. They discussed how AI technologies influence consumer behavior, from personalized recommendations to targeted advertising, and the importance of understanding these dynamics in marketing.

The conference concluded by focusing on the ethical challenges associated with AI in marketing. The speakers emphasized the need to consider ethical implications when implementing AI technologies and to strengthen responsible practices that protect consumer rights and ensure transparency.

Overall, the NIM Market Decisions Day 2024 provided a comprehensive overview of the current and future impact of AI on marketing, giving the attendees insights that can help them better navigate this evolving landscape.





Considerations of AI

Prof. Alena Buyx, former Chairwoman of the German

Ralph Klein-Boelting, President, NIM

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#### **Conference Speakers**

NIM Market Decisions Day 2024 – a short review with the highlights on YouTube:



#### Emil's World

Ranga Yogeshwar, science journalist and presenter

#### More Insights Through (Gen) AI

Dr. Christian Niederauer, Vice President – Global Insights & Consumer Affairs, Colgate-Palmolive Company



Prof. Mark Heitmann, Startup founder and Professor of Marketing, University of Hamburg

ost Beautiful n the World"



Moderation: Nadia Kailouli, ARD television presenter, Al podcaster, and University Professor

Mehr Insights durch generative Al



An Abundant Future Zack Kass, OpenAI, former Head of Go-To Market

## THE GREATEST RISK FOR MARKETERS TODAY ISN'T MISSING OUT ON A TREND—IT'S HOLDING ONTO TOXIC ASSUMPTIONS THAT BLOCK INNOVATION.

ChatGPT has catapulted generative Al into the spotlight, making it one of the most talked-about business topics virtually overnight—promising to revolutionize marketing by simplifying the creation of personalized content, enhancing data analysis with unprecedented precision, and optimizing strategies and decisions. What are the tangible benefits, challenges, and future opportunities of Al-driven marketing strategies?

To answer these questions, we had a conversation with **Dr. Fabian Buder**, Head of Future & Trends at NIM, about generative AI and the prospects of the metaverse for brands.

#### At the Nuremberg Institute for Market Decisions, you are concerned with the future of decisions in markets. What are the most important trends you are currently working on in your research?

FABIAN BUDER: We are currently working on two major trends that will shape the future of marketing and consumer decision-making.

First, generative AI is transforming marketing. While it offers enormous potential, it also brings challenges. We're studying how AI is reshaping the entire marketing landscape—from content creation to strategic planning—and the mixed reactions from consumers. It's about finding ways to ensure AI adds value not just for businesses but also for customers.

Second, we're exploring the future of consumer decisions in virtual worlds or metaverses. The way people interact in these





"Al's influence will

only grow, shaping

both business and

society for years to

come"

spaces is evolving fast, and brands need to understand how to build relationships in these virtual environments. We're investigating both the possibilities and the hurdles marketers face in connecting with audiences here.

### The metaverse hype seems to have cooled off a bit. Do you think it is still relevant?

Absolutely! The hype might be over, but the real disruption is just beginning. It's a bit like the dot-com bubble—after the hype came real, lasting changes. Platforms like Roblox and Fortnite are still growing, with millions of users socializing, maintaining virtual identities, and even purchasing virtual

and real products. Marketers need to navigate these spaces, especially since traditional media struggles to reach younger audiences who are highly active here.

#### When it comes to AI, I get the opposite impression. Hardly a day goes by without news about new or more powerful tools. What do you think, is AI here to stay or is it here to go?

I am a believer: AI is definitely here to stay. I'm absolutely convinced that we are on the verge of an AI-driven industrial revo-

lution. Its adoption is already widespread, and its economic impact is massive. In the case of marketing, our research shows that AI is a transformative force already. AI's influence will only grow, shaping both business and society for years to come.

#### You said AI is already a transformative force in marketing. How exactly is the technology used there?

A key finding of our study is that generative AI has already become a core part of marketing. Every marketer we surveyed has already worked with AI tools, and almost half are heavy users, meaning they say they use generative AI tools mostly or even almost always for their marketing activities. In particular, market research, content creation, and, surprisingly, strategic planning activities are where generative AI is heavily used. Interestingly, the more senior the role, the more likely they are to use AI extensively.

Generative AI isn't just speeding up information gathering; it's increasingly being seen as a creative partner. It's fast becoming a standard tool for generating insights and driving strategic decisions. In fact, 63% of marketers say AI has significantly improved their marketing efforts. It's easy to see why AI adoption is accelerating across the board.

## Are there also challenges for marketing managers when using generative AI?

Absolutely. One of the biggest challenges is the knowledge gap around legal and ethical issues. While many marketers feel confident about using AI, our research found that more than 40% have limited knowledge of the legal implications of AI-generated content. Similarly, almost 40% admitted that they don't really understand the ethical considerations of using AI. These are critical areas that could cause significant problems if not properly addressed.

## How can companies ensure AI use is both legally compliant and ethically sound?

Companies need to be proactive. On the one hand, they should establish the right organizational structure—clear policies, executive support, dedicated budgets, and a culture of openness around AI. Our research gives evidence that such companies see greater value from AI.

Training is also essential. Marketers are happy to learn by experimenting with AI tools, but this hands-on approach probably isn't enough when it comes to complex ethical and



legal issues. Companies need to provide comprehensive training on legal frameworks and ethical considerations to ensure AI is used responsibly and effectively.

### Finally, looking ahead, how can marketers future-proof their strategies in such a rapidly evolving landscape?

One thing I find that is holding companies back is to stay ahead, marketers need to remain flexible and constantly look for and challenge what I call toxic assumptions—those widely shared outdated beliefs that can block innovation. It's important to cultivate a mindset that challenges the status quo. Assumptions that have guided marketing for years might no longer hold true. Marketers should regularly question established practices and explore innovative approaches to connect with their audience.

The key is to be open to new technologies like AI, experiment with fresh ideas, and question long-held practices. The greatest risk for marketers today isn't missing out on a trend—it's holding onto toxic assumptions that block innovation. Collaboration across departments, especially with tech teams, is also crucial. The future of marketing lies at the intersection of creativity and technology, and those who embrace both will thrive.

This interview was conducted by Tobias Biró (NIM)



## THE POWER OF PERSUASION: DRIVING SUSTAINABLE CHOICES IN E-COMMERCE

Have you ever tried to buy a sustainable product? Online shops are increasingly integrating filters that allow consumers to display results according to sustainability criteria. A recent study delves into how these design features influence consumer choices.

Authors: Carolin Kaiser, Matthias Unfried, Rene Schallner (NIM), David Horneber, Sven Laumer (Friedrich-Alexander-University of Erlangen-Nuremberg)

oday, shoppers often find themselves overwhelmed when trying to make buying choices. The sheer amount of products and information available can cause what's known as choice overload. Moreover, the present economic scenario, specifically high inflation rates, urges many to focus on price. Simultaneously, a growing awareness about sustainability has led many to prefer eco-friendly products. In fact, 62% are ready to alter their shopping habits to lessen environmental damage, but only 31% have managed to mostly buy sustainable items recently. The higher prices of green products remain a major hurdle, with 53% of U.S. shoppers finding them too pricey.

Now, online sellers are adopting numerous tactics to ease the buying process while also boosting their earnings. For instance, Amazon has a feature called "Amazon's Choice" to highlight certain products, making it simpler for buyers to decide. Moreover, various online platforms offer filters and sorting features to help narrow down choices. Observing the rising demand for sustainable goods, many online stores like Booking, Zalando, and Nordstom now have a "sustainability" filter. Aside from these, the initial display order of products and sponsored content can also sway buying decisions.

AI is revolutionizing e-commerce strategies, particularly in how consumers interact with online stores. AI-powered recommendation engines analyze past behavior to make personalized suggestions, reducing choice overload and helping customers find what they want faster. AI also optimizes filters and sorting options, ensuring sustainability-focused shoppers see eco-friendly products aligned with their preferences.

Understanding how design elements such as filters, sorting, and sponsored content—impact purchasing behavior is essential to refine the AI algorithms driving e-commerce platforms. This study delved into how these design features influence consumer choices, especially around sustainable products, offering valuable insights for both retailers and consumers.

For this purpose, a team of researchers from NIM and Friedrich-Alexander-University of Erlangen-Nuremberg conducted an online experiment to understand how different design features can influence consumer choices when shopping for sustainable products. Participants were asked to purchase a basic white T-shirt in a mock-up online fashion store, allowing us to see how eco-labels and sorting options impact their buying decisions.

We divide participants into four groups (see Figure 1):

- 1. Control group: Products were shown with a sustainability rating (eco-label).
- Sorting group: Consumers could sort products by their sustainability ratings.
- 3. Sponsored content group: Sponsored products with lower sustainability ratings were placed at the top, even with the ecological sorting option.
- Self-nudge group: Before entering the store, participants were asked if they wanted their search results sorted by sustainability.

The store displayed 15 T-shirts with various prices and sustainability ratings, and each participant had VT-\$30 (vir-



Figure 1: Experimental Groups

tual dollars) to spend. Unspent money was converted into real cash for compensation, and to encourage ecofriendly purchases, we tied donations to a conservation charity based on the sustainability rating of the chosen product—the higher the rating, the larger the donation. With 1,198 U.S.-based participants, we collected insights on how these design features impact decision-making. After the purchase, we also asked participants about their motivations, from value for money to ethical considerations.

Our study looked at how different e-commerce design elements—like eco-rating labels, sustainability sorting, and sponsored content—impact consumer decisions. The results showed that offering a sustainability sorting option did not significantly boost the effect of an eco-rating label, and placing sponsored products at the top of the page didn't deter users from making sustainable choices.

Interestingly, only 25% of participants used the sustainability sorting option, even when it was available. Moreover, even when sponsored items appeared at the top, the number barely changed (21%). However, in the self-nudge group, where users were asked if they wanted to sort by sustainability before shopping, 77% chose to do so. This suggests that consumers are more likely to engage with sustainable options when prompted

#### **KEY INSIGHTS**

- In online shopping, consumers are more likely to engage with sustainable options when prompted to make an active decision.
- Sorting tools alone may not significantly drive eco-friendly purchases. Instead, web store owners need a more nuanced approach when using design elements to promote sustainability in online shopping.
- Although its effect was modest, self-nudging increases consumer autonomy and enhances the overall shopping experience.

to make an active decision, whereas sorting features alone have a limited impact on actual purchase behavior.

These findings highlight that sorting tools may not significantly drive ecofriendly purchases, which is important for marketers looking to influence consumer behavior. They also raise questions about the effectiveness of digital nudging, showing that even subtle tactics like self-nudging have only a weak effect on buying patterns. For marketing professionals, this points to the need for a more nuanced approach when using design elements to promote sustainability in online shopping.

This research offers key insights for e-commerce managers, consumers, and society, especially in the growing market for sustainable products. Many online retailers like Booking, Zalando, and Nordstrom now provide options to search for eco-friendly products. While these features cater to environmentally conscious shoppers, they don't necessarily influence those who aren't prioritizing sustainability. As a result, many e-commerce platforms should combine these eco-friendly options with other persuasive design elements, such as focusing on price or product ratings.

AI plays a crucial role in this process. By analyzing consumer behavior, AI-driven recommendation engines can predict individual preferences and suggest products that match those preferences, helping personalize the shopping experience. AI can also optimize the use of filters and sorting options, ensuring that sustainability-focused consumers are more effectively matched with ecofriendly products, while those who prioritize price or ratings are also served.

Our findings suggest that using a mix of design strategies, with the strategies reflecting different goals, does not negatively impact overall sales. Retailers can successfully combine AI-powered personalization with a range of persuasive tools to reach different consumer segments. Additionally, our research shows that self-nudging—where shoppers are prompted to choose how they sort products-can lead to more sustainable choices. Although its effect was modest, self-nudging increased consumer autonomy and enhanced the overall shopping experience.  $\leftarrow$ 

#### **FURTHER READING**

Horneber, D., Kaiser, C., Unfried, M., Schallner, R., & Laumer, S. (2025). Conscious Consumerism: On the Interaction Between Different Design Elements in E-Commerce to Promote Green Purchasing Behaviors. To appear in: Proceedings of the 58th Hawaii International Conference on System Sciences (HICSS).



## PUBLISHING DETAILS

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The Nuremberg Institute for Market Decisions (NIM) is a non-profit research institute at the interface of academia and practice. NIM examines how consumer decisions change due to new technology, societal trends or the application of behavioral science, and what the resulting micro- and macroeconomic impacts are for the market and for society as a whole. A better understanding of consumer decisions and their impacts helps society, businesses, politics, and consumers make better decisions with regard to "prosperity for all" in the sense of the social-ecological market system.

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