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THE WHARTON BLUEPRINT FOR EFFECTIVE AI CHATBOTS

The Latest Scientific Evidence on How to Create AI Chatbot Interactions That Boost Your Customer Satisfaction and Sales

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Human-AI Research
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FOUNDER OF
SCIENCE SAYS

Thomas is the founder of Science Says, a platform and newsletter that gives businesses practical insights from the latest scientific research. An ex-Googler, Thomas was frustrated by how far removed business practices were from the latest evidence. Today, Science Says helps thousands of companies—from startups to Fortune 500 firms—get better results. Thomas is a graduate of Rotterdam School of Management, Erasmus University, where he assisted Stefano Puntoni with his research.

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USING THIS BLUEPRINT

What You Will Get From the Wharton Blueprint for Effective AI Chatbots

Not all AI chatbots are created equal. Some drive satisfied customers, higher sales, and create positive brand experiences. Others leave customers frustrated, angry, and unlikely to return.

How can you make your chatbot a customer winner?

This Blueprint uses the latest scientific research to give you practical answers to this question.

How to Use It:

Read the Blueprint to understand how your chatbot should behave. Then, feed the blueprint to the AI powering your chatbot and ask it to follow these instructions when interacting with customers.

Should You Be Using an AI Chatbot, a Human, or a Mix?

Before we jump into how to optimize your AI chatbot—are you sure you should be using one?

Some tasks are better left to humans, while others are perfectly suited to AI chatbots. Wharton's **Lennart Meincke** and **Christian Terwiesch** have developed a framework for you to decide. We've simplified it below and on the next slides (you can read the full framework here).

Situation 1: Use AI Chatbots	**Situation 2: Use AI Chatbots, with Light Human Supervision**
Situation 3: Use Humans, with AI to Assist	**Situation 4: Use Humans**

Framework

Situation 1: Use AI Chatbots

When to use: High-volume, repetitive task oriented, and lower-risk industries like travel, retail, logistics, and hospitality.

Examples: AI handles check-in queries, baggage tracking, and flight updates without human intervention. AI manages refund status updates and order tracking for thousands of customers.

How it works: AI runs independently with the occasional human audit applied to ensure accuracy and performance.

Situation 2: Use AI Chatbots, with Light Human Supervision

When to use: Medical records processing, financial reporting, ecommerce, online banking, government customer services, or reducing human workload on repetitive tasks while maintaining quality through oversight.

Examples: AI reads imaging scans and prepares initial diagnostic reports. Radiologists approve or tweak before finalizing. AI manages live chat support for order tracking and product inquiries. Humans step in for complex issues. AI handles common troubleshooting requests, escalating unresolved issues to IT staff.

How it works: AI drafts responses or manages interactions. Humans either review before delivery or monitor live interactions and intervene when necessary.

Framework

Situation 3: Use Humans, with AI to Assist

When to use: Healthcare consultations, financial advisory, complex call centers, insurance claims, legal document reviews, and customer dispute resolutions.

Examples: During patient calls, if a nurse gives incorrect co-pay information or omits critical post-surgery instructions, AI flags it immediately for correction. AI monitors financial advisors to ensure compliance with investment policies during client calls. AI suggests claim settlements, but adjusters make the final call.

How it works: AI monitors human conversations in real-time to catch errors and provides decision support by suggesting options. Humans maintain final control over decisions and responses.

Situation 4: Use Humans

When to use: Legal industry, regulatory heavy compliance industry, and businesses where accuracy is nonnegotiable.

Examples: A call center where nurses answer pre-surgery questions like “When is my last meal before surgery?” AI can review transcripts after the fact to ensure consistent medical advice. Law firms handling client consultations with lawyers directly. AI can audit conversations to improve quality but doesn’t interfere in real-time.

How it works: Humans handle all interactions. You should still use AI to review conversations later to identify errors and trends.

KNOWLEDGE AT WHARTON

Learn more in this space:

How are Companies Really Using AI?

Scientific research from Wharton University of Pennsylvania

Meincke, L., & Terwiesch, C. (2025).
Reimagining customer service journeys with LLMs: A framework for chatbot design and workflow integration.

INCREASING AI CHATBOT USAGE

INCREASING AI CHATBOT USAGE

Address These 5 Key Factors

Research Findings

- People resist AI tools due to five psychological barriers: opacity, emotionlessness, rigidity, autonomy, and non-human nature.
- When people perceive AI negatively, as rigid or overly autonomous, it makes people feel like they lose control. People also inherently favor human decision-makers.

Practical Implications

- Explain AI decisions clearly, including why it chose some options or excluded others. This will build trust.
- In personal assistant roles, add human-like touches (e.g., give the AI a name) to make AI feel more relatable.
- Highlight AI adaptability (e.g., "Learns your preferences over time") to counter perception that the tool is rigid or outdated.
- Allow users some control (e.g., give features to name or select AI avatar) to reduce their concerns about AI autonomy.
- Do not frame AI as "having human-like consciousness." Focus instead on its practical tool-like abilities and benefits.

What Drives This

- The five psychological barriers come from the way the brain works as well as social norms:
  1. **Perceived opacity** - not understanding how AI works
  2. **Emotionlessness** - viewing AI as less capable of tasks requiring emotion
  3. **Rigidity** - the belief that AI neglects situations and people's "uniqueness"
  4. **Autonomy** - AI can threaten people's sense of control
  5. **Non-human nature** - treating AI differently because it is not human

Limitations

- The research focused on user perceptions and psychological tendencies, which may not generalize across all AI applications or cultural contexts.

KNOWLEDGE AT WHARTON

Learn more in this space:
Why Is It So Hard for AI to Win User Trust?

Research: De Freitas, J., Agarwal, S., Schmitt, B., & Haslam, N. Psychological factors underlying attitudes toward AI tools. *Nature Human Behaviour* (2023).

INCREASING AI CHATBOT USAGE

Label Your AI As “Constantly Learning”

Research Findings

- People chose algorithms labeled as “learning” (vs. no label) 55% (vs. 43%) of the time in financial and healthcare tasks.
- The label improves perceptions of the AI, improving trust, acceptance, and increasing reliance on AI predictions over time.

Practical Implications

- Use “learning” labels (e.g., “This AI adapts and improves with use”) to encourage users to rely on your AI chatbot, especially in high-stakes contexts like financial or healthcare advice.
- Pair the “learning” labels with clear explanations of how the algorithm improves (e.g., “This chatbot improves based on user feedback”) to further enhance trust.
- Avoid presenting algorithms as static or fixed (e.g., “Last updated in 2023”). This hurts user confidence in AI reliability and adaptability.

What Drives This

- People distrust algorithms when they assume they don’t improve over time and are outdated.
- The “learning” label makes the AI seem dynamic and able to gain experience over time, just like humans would.
- This boosts user trust, especially as the algorithm demonstrates improvements in real time.

Limitations

- The experiments relied on simulated tasks in financial and healthcare domains, which may not fully generalize to all real-world scenarios.
- Participants had limited exposure to the algorithms, focusing on short-term interactions rather than long-term use patterns.

Research: Chacon, A., Kausel, E. E., Reyes, T., & Trautmann, S. Preventing Algorithm Aversion: People Are Willing to Use Algorithms with a Learning Label. *Journal of Business Research* (2025).

INCREASING AI CHATBOT USAGE

Research Insights

Make Your AI Chatbot Modifiable

People are more willing to use AI tools, like chatbots, if they have the ability to modify or customize them. Allowing people to even mildly adjust chatbot behavior or responses (e.g., tweaking tone, setting preferences for response length) can increase their confidence in the tool, improve satisfaction, and reduce resistance to using the AI chatbot.

Scientific research from Wharton University of Pennsylvania

Dietvorst, B., Simmons, J., & Massey, C., Overcoming Algorithm Aversion: People Will Use Imperfect Algorithms If They Can (Even Slightly) Modify Them (2016).

When Using AI for Voice-Assisted Shopping Bots, Highlight Its Convenience

Voice-enabled shopping bots (e.g., Amazon Alexa, Google Home), which are increasingly AI-powered, influence people through two main features: Ordering Convenience and Shopping Support. Ordering Convenience (e.g., quick payment options) appeals to a wide audience. Shopping Support (e.g., personalized recommendations and deal-finding) is especially effective for customers with weaker brand loyalty. Focus on Ordering Convenience to attract more shoppers and use Shopping Support to build loyalty by making customers feel valued and understood.

Scientific research from Wharton University of Pennsylvania

Liu, Y., Yildirim, P., & Zhang, Z. J. Consumer preferences and firm technology choice. *International Journal of Research in Marketing* (2024).

INCREASING AI CHATBOT USAGE

Have a Better-Than-Human Bot, or Pass On the Savings

Research Findings

- Chatbots were rated 8.5% lower than humans when providing the same exact service, due to perceptions that AI chatbots are a cost-cutting measure at the expense of customer experience.
- Highlighting superior chatbot performance, such as faster or error-free service, improved service evaluations by 37.2%.
- Offering a 20% discount for using a chatbot brought service evaluations up to a level comparable to human service, mitigating the negative perception.

Practical Implications

- Highlight chatbots' benefits, such as faster response times or error-free service, to improve customer perceptions and service evaluations.
- Pass on cost savings through visible customer incentives (e.g., "Save 10% when ordering through our chatbot") to counteract negative cost-cutting attributions.

What Drives This

- People associate chatbots with firm cost-cutting motives, perceiving this as prioritizing profits over customer benefits.
- Highlighting customer benefits (e.g., speed, accuracy) or offering financial incentives (e.g., discounts) helps shift perceptions by demonstrating how chatbots add value to customers rather than solely benefiting the firm.

Limitations

- The experiments focused on service evaluations in specific contexts (e.g., coffee shops, digital ordering), which may not generalize to all industries or service scenarios.
- The chatbot performance was standardized, and real-world variations in chatbot capabilities could influence customer reactions differently.

Research: Castelo, N., Boegershausen, J., Hildebrand, C., & Henkel, A. P. Understanding and Improving Consumer Reactions to Service Bots. *Journal of Consumer Research* (2023).

INCREASING AI CHATBOT USAGE

Use Chatbots To Promote Both Popular and Niche Products

Research Findings

- Recommendations that suggest products based on what others bought (e.g., 'People who bought this also bought') can increase the variety of products an individual sees and chooses from.
- However, if left unchecked, it eventually reduces the overall variety of products sold across all customers.

Practical Implications

- Recalibrate AI chatbots to recommend both popular and niche products in suggestions (e.g., highlighting less frequently purchased items alongside popular options).
- Introduce randomized or curated nudges in recommendations (e.g., “You might also like” sections promoting niche items) to encourage exploration while maintaining variety.
- Use chatbots to present context-aware recommendations, ensuring niche items feel personalized to the conversation.

What Drives This

- This type of recommendation system means that popular items get shown more often, making them even more popular.
- While people might see some new types of products, they usually end up liking the same things as others. As a result, fewer unique or niche products get bought, and sales tend to focus on a smaller group of popular items.

Limitations

- The study’s findings are not directly tied to AI chatbots, but recommendation systems are often embedded in chatbot functionalities.

Scientific research from Wharton University of Pennsylvania

Lee, D., & Hosanagar, K. How Do Recommender Systems Affect Sales Diversity? A Cross-Category Investigation via Randomized Field Experiment. *Information Systems Research* (2019)

INCREASING AI CHATBOT USAGE

Frame AI As Superhuman

Research Findings

- People with limited knowledge of AI (low understanding of how it functions, its capabilities, limitations, and mechanisms) were 31% more receptive to using AI-based products and services compared to those with higher AI knowledge.
- People with lower AI knowledge were 29% more likely to perceive AI as magical. This made them more willing to adopt it for personal tasks and assignments.

Practical Implications

- Educate less AI-savvy users by framing AI tools as magical (e.g., “Our AI simplifies tasks beyond what’s imaginable!”).
- Avoid relying on technical messaging, instead emphasize the transformative and intuitive nature of AI products.

What Drives This

- People with lower AI knowledge perceive it as more magical and superhuman. This creates feelings of awe and wonder and makes them more interested in using AI.
- By contrast, individuals with higher AI knowledge are more likely to understand AI's mechanisms, which diminishes its magical appeal and lowers interest.

Limitations

- The research focused on specific personal tasks and educational settings, which may not generalize to other business applications.
- The reliance on self-reported measures of AI receptivity may not fully capture real-world behavior or decision-making patterns.

Research: Tully, S., Longoni, C., & Appel, G. Lower artificial intelligence literacy predicts greater AI receptivity. *Journal of Marketing* (2025)

INCREASING AI CHATBOT USAGE

Research Insights

AI Companions Fail To Provide Helpful or Empathetic Responses

People are using AI companion chatbots, like Cleverbot and Simsimi, to discuss mental health issues. However, these AI systems often fail to recognize distress signals and provide helpful or empathetic responses. This creates reputational and legal risks for companies deploying such technologies—consumers may react negatively to unhelpful or risky interactions. Be aware of the potential for harm and reputational damage, especially if you're targeting or interacting with vulnerable populations and groups.

Scientific research from Wharton University of Pennsylvania

De Freitas, J., Uğuralp, A. K., Oğuz-Uğuralp, Z., & Puntoni, S. Chatbots and mental health: Insights into the safety of generative AI. *Journal of Consumer Psychology* (2024).

Make Sure To Accommodate Vulnerable Users

AI can empower vulnerable consumers by making services more accessible, interactive, and dynamic. For example, technologies like natural language processing (NLP) detect vulnerability (e.g., someone visually impaired) during customer interactions and can offer real-time tailored support. AI tools can assist visually impaired consumers by describing objects and providing auditory navigation. Additionally, companies like Capita use AI to analyze tone and behavior during conversations to identify at-risk consumers (e.g., emotional distress, financial vulnerability) and provide personalized interventions. These tools not only improve customer experiences but can also address social inequalities.

Scientific research from Wharton University of Pennsylvania

Hermann, E., Williams, G. Y., & Puntoni, S. Deploying artificial intelligence in services to AID vulnerable consumers. *Journal of the Academy of Marketing Science* (2024).

“AI can detect the unique needs and emotional states of each individual in real time. However, you need to ensure that your AI is continuously monitored for biases and updated to interpret and respond accurately to diverse needs.”

Stefano Puntoni,

PROFESSOR OF MARKETING, THE WHARTON SCHOOL, UNIVERSITY OF PENNSYLVANIA

INCREASING AI CHATBOT TRUST

INCREASING AI CHATBOT TRUST

Show Examples of Your AI's Accuracy

Research Findings

- People trust AI more when they see evidence of its success in real-world tasks (e.g., "Booked 531 flights today!") rather than detailed explanations about its decision-making process.
- This type of evidence increased trust in AI and improved expected accuracy by up to 22.1%.

Practical Implications

- Highlight the accuracy of AI predictions or task performance through clear, measurable outcomes (e.g., "94% of users loved the products recommended by our AI").
- Use relatable examples. For example, show AI efficiently resolving customer issues or providing correct predictions.
- Avoid overwhelming people with overly technical or complex explanations of how AI works unless absolutely necessary.

What Drives This

- People prefer understanding effective results rather than technical workings.

Limitations

- Results are based on speed-dating predictions, which may not generalize to all AI applications.
- Trust may decrease if a person uses AI and its predictions fail to perform accurately.

Scientific research from Wharton University of Pennsylvania

Ahn, D., Almaatouq, A., Gulabani, M., & Hosanagar, K. Will we trust what we don't understand? Impact of model interpretability and outcome feedback on trust in AI (2021).

“When possible, try to show validation of AI recommendations in real-time. For example, for a sales lead scoring system, you could show that ‘AI-flagged high-priority leads have engaged with outreach 30% more than others today.’”

Kartik Hosanagar,

PROFESSOR OF OPERATIONS, INFORMATION, AND DECISIONS,
WHARTON SCHOOL, UNIVERSITY OF PENNSYLVANIA

INCREASING AI CHATBOT TRUST

Give Faster AI Responses

Research Findings

- Fast algorithmic predictions were perceived as more accurate than slow ones.
- Participants rated faster predictions as better in quality and were more likely to rely on them.
- People trusted algorithms that generated quickly (vs. slowly) 6.1% more.

Practical Implications

- Design algorithms and AI systems to deliver predictions quickly, especially for high-frequency tasks like sales forecasting or customer service.
- When delays are unavoidable (e.g., a technical limitation), provide clear explanations (e.g., "This is taking a moment as I analyze detailed patterns for greater accuracy") to reduce loss of trust.

What Drives This

- People expect machines to handle tasks efficiently.
- People associate speed with competence and reliability, so slow responses signal inefficiency and reduce trust.

Limitations

- Findings were limited to perceptions of prediction accuracy and trust in a specific instance, without exploring longer-term effects on user behavior or loyalty.
- The experiments did not account for contextual variables, such as how critical a task was or how familiar with the algorithm the user is (as this could affect user sensitivity to response times).

Research: Efendić, E., Van de Calseyde, P. P. F. M., & Evans, A. M. Slow response times undermine trust in algorithmic (but not human) predictions. *Organizational Behavior and Human Decision Processes* (2020).

INCREASING AI CHATBOT TRUST

Highlight Human Input in Designing the AI

Research Findings

- Users trusted AI tools (e.g., chatbots, AI coaches) 4.6% more when companies explicitly highlighted human involvement in their development (e.g., "Our AI tools are developed with expert input").
- When human-AI collaboration was emphasized, it made people feel more transparency and trust.
- When AI was framed as entirely autonomous or overly human-like, people found it less reliable and trustworthy.

Practical Implications

- Always communicate human involvement in AI development (e.g., “Built by top dermatologists to provide personalized skincare recommendations”).
- Avoid presenting AI chatbots as entirely autonomous systems; instead, highlight collaboration between human expertise and AI.

What Drives This

- Highlighting human input increases people’s subjective sense that they understand the AI, which boosts trust and sense of helpfulness.

Limitations

- The study primarily focused on consumer-facing applications of AI (e.g., AI coaches) and may not generalize to other use cases.

Research: Zhang, Y., Tuk, M. A., & Klesse, A.-K. Giving AI a human touch: Highlighting human input increases the perceived helpfulness of advice from AI coaches. *Journal of the Association for Consumer Research* (2024).

INCREASING AI CHATBOT TRUST

Prompting Humor Can Lead to Negative Stereotypes

Research Findings

- When AI was instructed (600 images generated using 150 prompts) to "make images funnier," it increased the representation of stereotyped groups (e.g., older adults, visually impaired individuals, and those with high body weight).
- However, politically sensitive groups (e.g., racial minorities and women) were depicted less frequently after making the images funnier.

Practical Implications

- If using humor in chatbots (e.g., to increase user engagement), be cautious of sensitive topics so that the chatbot does not inadvertently reinforce harmful stereotypes. Chatbots trained on biased datasets may disproportionately use humor at the expense of marginalized groups, which can alienate users, perpetuate discrimination, and erode trust.
- There is a need for ethical standards for GenAI. They need to be established and continuously evaluated to avoid biases and maintain trust with diverse audiences.

What Drives This

- Humor in AI often targets already marginalized groups. This makes stereotypes worse and reinforces negative prejudices.
- This reflects broader societal biases, where a lot of focus is given to racial and gender discrimination but less to other groups (e.g., ableism).

Limitations

- The study focused specifically on the impact of humor, so results may vary across different AI platforms or humor types.
- The study's scope was limited to AI-generated images, and these findings may not always translate to other AI applications (e.g., text generation or product recommendations).

KNOWLEDGE AT WHARTON

Learn more in this space:
Detecting Bias in AI Image Generators

Scientific research from
Wharton University of Pennsylvania

Saumure, R., Freitas, J., & Puntoni, S. Humor as a window into generative AI bias. *Scientific Reports* (2025).

INCREASING AI CHATBOT TRUST

Research Insights

Prioritize Responsible Deployment of AI

AI is transforming marketing, but it can unintentionally reinforce biases due to interactions between algorithms and human decisions (e.g., ads for STEM jobs were shown more often to men, and a court appearance algorithm reinforced harsher penalties for Black defendants). To use AI effectively, prioritize ethical deployment, address potential biases, and integrate behavioral insights. Responsible AI use can enhance customer experiences and drive better outcomes while minimizing risks.

Scientific research from Wharton University of Pennsylvania

Puntoni, S. Artificial Intelligence in Marketing: From Computer Science to Social Science. *Journal of Macromarketing* (2024).

Use the Assurance Framework To Use GenAI Responsibly

The ASSURANCE principles—Autonomy, Security, Sustainability, Representativeness, Accountability, Non-biasedness, Crediting, and Empowerment—guide organizations to leverage GenAI responsibly. They ensure positive outcomes for businesses, consumers, and society while reducing risks related to GenAI's impact on human replacement. Example implications for marketers:

- Autonomy: When using GenAI for campaign strategy, ensure that while AI suggests strategies, final decisions are made by human experts, keeping the team's autonomy in key choices like target market selection.
- Representativeness: When using GenAI to create customer personas, ensure that the training data includes diverse representations across race, gender, age, etc. Biases could skew the insights or reinforce negative stereotypes.
- Empowerment: Instead of fully replacing human writers, GenAI can empower content creators by speeding up research or suggesting ideas, which would allow human workers to focus on more strategic and creative aspects of content.

Scientific research from Wharton University of Pennsylvania

Hermann, E.,& Puntoni, S. Generative AI in Marketing and Principles for Ethical Design and Deployment. *Journal of Public Policy & Marketing* (2024).

“When deploying AI ask yourself, 'Can we automate this to make their experience better, and should we automate this, considering potential risks?’ Don't let efficiency overshadow ethics or the customer experience.”

Stefano Puntoni,

PROFESSOR OF MARKETING, THE WHARTON SCHOOL, UNIVERSITY OF PENNSYLVANIA

WHEN TO USE HUMAN-LIKE VS. MACHINE-LIKE AI CHATBOTS

WHEN TO USE HUMAN-LIKE VS. MACHINE-LIKE AI CHATBOTS

Human-like Vs. Machine-like Characteristics

Human-Like

Appearance

- Human face features (e.g., eyes, hair, smile)
- Outfits, clothing, and props

Language

- Empathetic and emotional
- Imperfect and dynamic
- Informal tone with filler words

Examples of ideal contexts

- Fun in-game AI chatbot companion
- Pleasurable ecommerce products (e.g., dresses)
- Giving positive news (e.g., free flight upgrade)

Machine-Like

Appearance

- Robotic features and icons
- Animated or flat (2D) style

Language

- Direct and objective
- Accurate and authoritative
- Formal and to the point

Examples of ideal contexts

- Insurance claim collection chatbot
- Practical, functional products (e.g., plumbing)
- Collecting sensitive information

How your chatbot appears and speaks makes a big difference in how it is perceived in different situations. Human-like AI chatbots can convey part of the warmth that would come from a human agent but should be avoided in certain situations.

WHEN TO USE HUMAN-LIKE VS. MACHINE-LIKE AI CHATBOTS

“People rated a company 8.1% higher when favorable decisions (e.g., loan approval, membership acceptance) were made by a human-like chatbot rather than a machine-like chatbot.”

Thumbs Up or Down: Consumer Reactions to Decisions by Algorithms Versus Humans.
Journal of Marketing Research (2021).

WHEN TO USE HUMAN-LIKE VS. MACHINE-LIKE AI CHATBOTS

Give Positive Decisions From a Human-Like Chatbot

Research Findings

- People rated the company 8.1% higher when favorable decisions (e.g., loan approval, membership acceptance) were made by a human-like chatbot rather than a machine-like chatbot.
- For unfavorable decisions, there was no significant difference in reactions between algorithmic, human-like AI, or human decision-makers.

Practical Implications

- Use human-like AI chatbots (e.g., human names, avatars, conversational tone) to deliver favorable decisions and emphasize their personalized and individualized nature, similar to human agents.
- Use algorithms or automated messages for unfavorable decisions (e.g., rejections) to maintain objectivity and reduce potential negative reactions.

What Drives This

- People tend to think favorable decisions are thanks to their own merits ("It's because I'm great") and negative ones are due to external factors not in their control ("They probably already knew who they would hire").
- Human-like AI chatbots and human agents are seen as more likely to recognize our individual merits, while standard machine-like chatbots are perceived as relying solely on impersonal, standardized criteria that overlook personal qualities.

Limitations

- The study measured attitudes toward decisions based on hypothetical scenarios, which may not fully capture real-world responses.
- The decision contexts focused on loan approvals and club memberships, limiting generalization to other types of decisions.

Research: Yalcin, G., Lim, S., Puntoni, S., & van Osselaer, S. M. J. Thumbs Up or Down: Consumer Reactions to Decisions by Algorithms Versus Humans. *Journal of Marketing Research* (2021).

“Don't underestimate the power of personalization, even with AI. Favorable decisions delivered by human-like chatbots are seen as more valid and appreciated because consumers feel their individual qualities are being considered."

Stefano Puntoni,

PROFESSOR OF MARKETING, THE WHARTON SCHOOL, UNIVERSITY OF PENNSYLVANIA

WHEN TO USE HUMAN-LIKE VS. MACHINE-LIKE AI CHATBOTS

"Negative decisions from AI chatbots are perceived as less intentional, softening their impact. People were up to 2.6 times more likely to accept a higher-than-expected price when delivered by an AI (vs. a human)."

Bad News? Send an AI. Good News? Send a Human. *Journal of Marketing* (2023).

WHEN TO USE HUMAN-LIKE VS. MACHINE-LIKE AI CHATBOTS

Research Insights

Use Machine-Like AI for Bad News, Human-Like AI for Good News

Use machine-like AI bots for delivering bad news or offering worse than expected news (e.g., higher prices, delays, rejections). In this study, people were up to 2.6 times more likely to accept a higher-than-expected price when it was delivered by an AI bot. Negative decisions from AI bots are perceived as less intentional, personal, or judgmental so it lowers bad news impact. However, use human-like AI for good news or offers better than expected (e.g., discounts, free upgrades).

Research: Garvey, A. M., Kim, T., & Duhachek, A. Bad News? Send an AI. Good News? Send a Human. *Journal of Marketing* (2023).

Use Machine-Like AI Chatbots for Practical Recommendations

People perceived AI as more competent in logical, fact-based evaluations (e.g., practicality) and perceived humans as better suited for emotional or sensory evaluations (e.g., beauty). When people were looking for a practical real estate investment, 59.8% preferred an AI recommender, while for a fun and enjoyable property, 75.7% preferred recommendations from a human agent. Use machine-like AI chatbots for recommending practical and functional products (e.g., a waterproof winter coat or an anti-dandruff shampoo) and human-like AI (or humans) for recommending experiential and sensory products (e.g., luxury fashion or a spa day).

Research: Longoni, C., & Cian, L. Artificial intelligence in utilitarian vs. hedonic contexts: The "word-of-machine" effect. *Journal of Marketing* (2022).

WHEN TO USE HUMAN-LIKE VS. MACHINE-LIKE AI CHATBOTS

“People were 11.2% less likely to interact with a human-like chatbot compared to a machine-like chatbot when purchasing embarrassing products.”

Avoiding embarrassment online: Response to and inferences about chatbots when purchases activate self-presentation concerns. *Journal of Consumer Psychology* (2024).

WHEN TO USE HUMAN-LIKE VS. MACHINE-LIKE AI CHATBOTS

Use Machine-Like AI Chatbots When Handling Embarrassing Contexts

Research Findings

- Clearly labeled, non-human-like AI chatbots made people feel more comfortable in embarrassing or sensitive contexts.
- People were 11.2% less likely to engage with a human-like chatbot compared to a machine-like chatbot when purchasing embarrassing products (e.g., antidiarrheal medication, sexual wellness products).

Practical Implications

- For sensitive or embarrassing products (e.g., personal care or medical supplies), use machine-like chatbots clearly labeled as machine-like AI (e.g., “This is an AI assistant”) to reduce customer hesitation.
- Avoid giving AI human-like traits in these contexts, as they may increase discomfort by implying the chatbot could feel or judge.

What Drives This

- People perceive AI chatbots as able to convey emotions but not actually understanding them—so they cannot feel emotions or pass judgment.
- This perception makes customers feel less embarrassed and more comfortable discussing or purchasing sensitive items when interacting with a more machine-like (vs. human-like) AI.

Limitations

- The study was limited to a small set of product categories in personal care and medications (e.g., personal lubricants, antidiarrheal medication).
- Chatbots used in the experiments were scripted, which may not fully capture the dynamics of real-world interactions.

Research: Jin, J., Walker, J., & Reczek, R. Avoiding embarrassment online: Response to and inferences about chatbots when purchases activate self-presentation concerns. *Journal of Consumer Psychology* (2024).

WHEN TO USE HUMAN-LIKE VS. MACHINE-LIKE AI CHATBOTS

Use Machine-Like AI Chatbots When Handling Sensitive Information

Research Findings

- Consumers disclosed 11.5% more sensitive information to AI bots than to human doctors, particularly in contexts where privacy and objectivity were critical (e.g., medical or financial data).
- However, people were 43.3% less likely to trust AI for tasks that require social judgment or nuanced emotional understanding (e.g., writing a sensitive speech for a community in distress).

Practical Implications

- Use machine-like AI chatbots for collecting sensitive data, particularly in medical or financial contexts (e.g., illness history, income level) where privacy concerns are high.
- Prioritize human-like AI for emotionally impactful interactions, such as addressing complaints, resolving emotionally charged issues, or discussing sadness.
- Try to avoid using AI for tasks that require social judgment or contextual awareness (e.g., curating socially sensitive content).

What Drives This

- People perceive AI as neutral and non-judgmental, so they prefer it when privacy and objectivity are important.
- Tasks that require empathy or complex social understanding are often better handled by humans, as AI lacks emotional depth and contextual awareness.

Limitations

- Results are based on specific contexts, such as medical services or financial disclosures, and may not generalize to other industries or situations.

Research: Kim, T. W., Jiang, L., Duhachek, A., Lee, H., & Garvey, A. Do you mind if I ask you a personal question? How AI service agents alter consumer self-disclosure. *Journal of Service Research* (2022).

WHEN TO USE HUMAN-LIKE VS. MACHINE-LIKE AI CHATBOTS

Don’t Use Overly Cute Avatars Where Trust Is Critical

Research Findings

- Customers were 23.5% more likely to follow the advice of AI chatbots with low-cuteness avatars compared to high-cuteness (e.g., big eyes, cartoon-like features) avatars.
- High-cuteness avatars reduced perceptions of competence and trust, particularly in situations requiring professionalism, such as financial advice or technical product recommendations.

Practical Implications

- Avoid using overly cute avatars for AI chatbots in trust-critical situations, such as medical advice, legal assistance, or crisis support.
- Use low-cuteness avatars paired with messaging that highlights the competence and reliability of the virtual assistant (e.g., “Recommendations are based on verified expert data”).

What Drives This

- People are more likely to trust virtual sales assistants when their design signals professionalism and relatability with a reassuring and clear tone.
- However, overly cute avatars can appear less serious and undermine these positive effects.

Limitations

- The focus of experiments was on a limited range of product categories and contexts, such as consumer electronics and online shopping, which may limit generalizability to other industries.
- Results rely on customer responses to static avatars rather than interactive or dynamic interfaces, which might influence perceptions differently.

Research: Lin, Y. T., Doong, H. S., & Eisingerich, A. B. Avatar Design of Virtual Salespeople: Mitigation of Recommendation Conflicts. *Journal of Service Research* (2021).

WHEN TO USE HUMAN-LIKE VS. MACHINE-LIKE AI CHATBOTS

“In high-pressure, time-sensitive contexts (e.g., travel rebooking), human-like chatbots reduced satisfaction by 15.7% compared to machine-like chatbots, as customers prioritize speed and clarity over emotional connection.”

Empathic Chatbots: A Double-Edged Sword in Customer Experiences. *Journal of Business Research* (2025).

WHEN TO USE HUMAN-LIKE VS. MACHINE-LIKE AI CHATBOTS

Don’t Use Human-Like Chatbots Under Time-Pressure Situations

Research Findings

- Human-like chatbots (e.g., empathetic) increased customer satisfaction by 18.4% in low-pressure scenarios, particularly for emotionally sensitive tasks (e.g., refunds or resolving concerns).
- However, in high-pressure, time-sensitive contexts (e.g., travel rebooking), human-like chatbots reduced satisfaction by 15.7% compared to machine-like chatbots, as customers prioritized speed and clarity over emotional connection.

Practical Implications

- Use human-like chatbots for emotionally sensitive tasks or low-pressure interactions to boost customer satisfaction.
- For time-sensitive tasks, prioritize machine-like chatbots with lower empathy to ensure efficient communication.

What Drives This

- People appreciate empathy in low-pressure interactions because it boosts emotional connection and the feeling of social presence.
- However, in high-pressure scenarios, customers expect speed and clarity, making empathy counterproductive.

Limitations

- The study focused on specific service contexts (e.g., travel insurance, car rentals, and accommodation bookings), which might limit the generalizability to other industries.

Research: Juquelier, A., Poncin, I., & Hazée, S. Empathic Chatbots: A Double-Edged Sword in Customer Experiences. *Journal of Business Research* (2025).

WHEN TO USE HUMAN-LIKE VS. MACHINE-LIKE AI CHATBOTS

“When people tried to resolve a customer service issue while angry, they were 23.4% less satisfied with human-like (vs. machine-like) chatbots.”

Blame the Bot: Anthropomorphism and Anger in Customer–Chatbot Interactions. *Journal of Marketing* (2022).

WHEN TO USE HUMAN-LIKE VS. MACHINE-LIKE AI CHATBOTS

Avoid Human-Like Chatbots With Angry Customers

Research Findings

- When people tried to resolve a customer service issue while angry, they were 23.4% less satisfied with human-like (vs. machine-like) chatbots.
- They experienced significantly lower satisfaction, worse firm evaluations, and reduced purchase intentions.

Practical Implications

- Use machine-like chatbots for situations where customers are likely to be angry (e.g., billing disputes or technical complaints).
- Manage customer expectations by giving disclaimers that explain the chatbot's limitations (e.g., "I'm here to help, but I'm just a bot!") to reduce dissatisfaction in case of unmet expectations.

What Drives This

- People expect more from chatbots that appear human-like, especially when they are upset.
- When these expectations aren't met, it can lead to more dissatisfaction compared to machine-like chatbots, which are viewed as less capable from the start.

Limitations

- Anger was measured or manipulated in controlled settings, and real-world expressions of anger may vary in complexity.
- The chatbot's performance was held constant across conditions, meaning real-world performance variability could influence outcomes differently.

Research: Crolic, C., Thomaz, F., Hadi, R., & Stephen, A. T. Blame the Bot: Anthropomorphism and Anger in Customer-Chatbot Interactions. *Journal of Marketing* (2022).

WHEN TO USE HUMAN-LIKE VS. MACHINE-LIKE AI CHATBOTS

Research Insights

Which AI Chatbot 'Job Titles' To Use

Assigning human-like job titles to AI agents, such as "AI Manager," improves how customers perceive their likability, knowledgeability, and trustworthiness compared to titles like "AI Representative" or even "Human Manager." This is because "Manager" implies higher authority and decision-making power. People assume the chatbot can handle more complex issues or make final decisions, similar to how they'd view a human manager.

Research: Jeon, Y. A. Let me transfer you to our AI-based manager: Impact of manager-level job titles assigned to AI-based agents on marketing outcomes. *Journal of Business Research* (2022).

KNOWLEDGE AT WHARTON

Learn more in this space:
Is algorithmic management too controlling?

WHEN TO USE HUMAN-LIKE VS. MACHINE-LIKE AI CHATBOTS

People More Easily Forgive Errors Caused by Machines

Research Findings

- Algorithmic errors caused 25.4% less brand harm compared to human errors.
- People showed more trust and forgiveness for brands when errors were framed as algorithmic rather than human-driven.

Practical Implications

- Use machine-like AI chatbots, rather than humans, for tasks prone to errors (e.g., automated financial prediction) to reduce negative consumer reactions to mistakes.
- Transparently frame algorithmic errors as unintentional and explain corrective actions taken (e.g., “A system glitch has been resolved to ensure accuracy”).

What Drives This

- People do not perceive algorithms as intentional, so they do not hold AI responsible for any harm or mistakes made.
- Since people are less likely to see AI mistakes as intentional, they’re less likely to blame the brand if an error occurs.

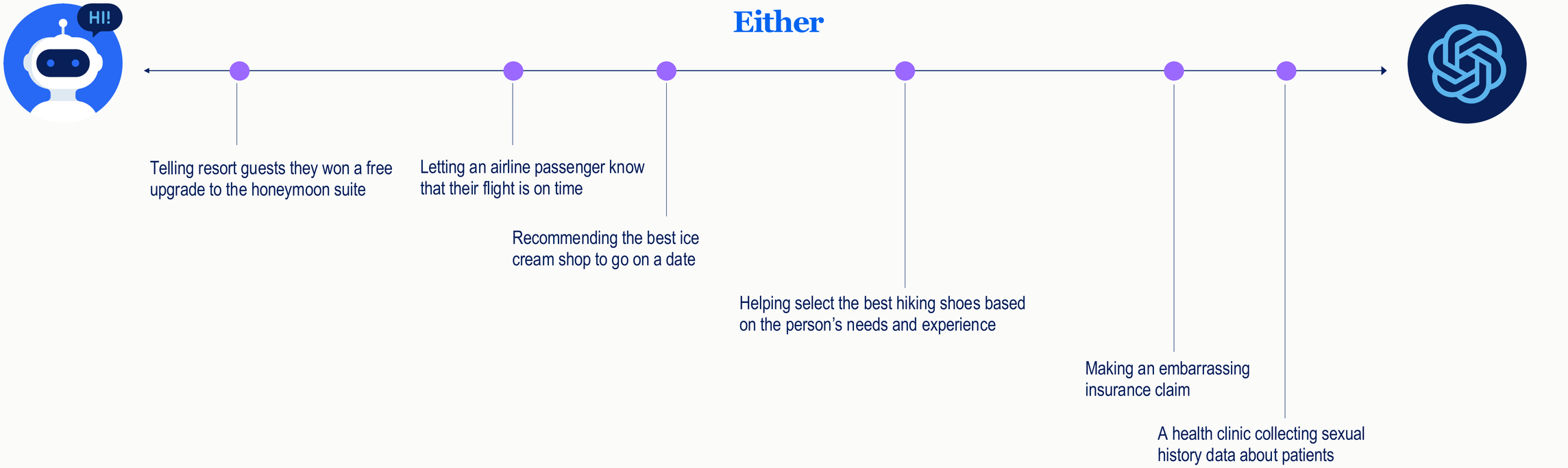
Limitations

- The research focused on algorithms in general, rather than AI specifically.
- The experiments primarily focused on financial and consumer service errors, which may not generalize to other industries.
- Studies relied on simulated scenarios, and real-world contexts could yield different consumer responses.

Research: Srinivasan, R., & Sarial-Abi, G. When Algorithms Fail: Consumers’ Responses to Brand Harm Crises Caused by Algorithm Errors. *Journal of Marketing* (2021).

WHEN TO USE HUMAN-LIKE VS. MACHINE-LIKE AI CHATBOTS

Examples of Human-Like vs. Machine-Like Optimal Situations



Pro tip: Try to make your chatbots adaptive so they change the words and sentences they use based on the type of conversation they are in (e.g., more human-like when detecting fraud attempts, more machine-like when a customer is angry).

MAKING AI CHATBOTS MORE HUMAN-LIKE OR MACHINE-LIKE

MAKING AI CHATBOTS MORE HUMAN-LIKE OR MACHINE-LIKE

“When chatbots tried to be more human-like by using interjections (e.g., “oh my!”) people felt that the chatbots were listening 17.5% more attentively.”

Wow! Interjections Improve Chatbot Performance: The Mediating Role of Anthropomorphism and Perceived Listening. *Communication Research* (2024).

MAKING AI CHATBOTS MORE HUMAN-LIKE OR MACHINE-LIKE

Make Your Chatbot Use Interjections To Feel More Human-Like

Research Findings

- When chatbots used interjections (e.g., “oh my!”) people felt that the chatbots were listening 17.5% more attentively.

Practical Implications

- Use interjections like “hmm,” “oh,” or “wow” when it’s beneficial to make chatbots feel more human.
- Add them strategically during pauses or empathetic moments (e.g., “Oh no! That sounds frustrating” for complaints) to build rapport and boost customer satisfaction.
- Avoid overusing them and keep the conversation natural. If it feels forced, it will reduce feelings of authenticity.

What Drives This

- People feel more “listened to” when chatbots use interjections because this helps mimic human conversations.
- This human-like trait makes chatbots seem more understanding and responsive, which boosts trust and satisfaction.

Limitations

- The experiments were in scenarios such as hotel bookings and warranty claims, which may not fully translate to other real-world applications.

Research: Sheehan, B., Jin, H. S., Martin, B., & Kim, H. J. Wow! Interjections Improve Chatbot Performance: The Mediating Role of Anthropomorphism and Perceived Listening. *Communication Research* (2024).

MAKING AI CHATBOTS MORE HUMAN-LIKE OR MACHINE-LIKE

Research Insights

Be Friendly, but Also Competent

Design your chatbot to use friendly language and show empathy (e.g., include emoticons or phrases like “Let me help you with that”). Friendly language makes AI feel approachable and engaging, while warm interactions build trust. However, prioritize competence rather than personality alone by ensuring accurate and timely responses. Use pre-programmed answers (e.g., FAQs) for common questions to improve response reliability and efficiency.

Research: Cheng, X., Zhang, X., Cohen, J., & Mou, J. Human vs. AI: Understanding the Impact of Anthropomorphism on Consumer Response to Chatbots from the Perspective of Trust and Relationship Norms. *Information Processing and Management* (2022).

MAKING AI CHATBOTS MORE HUMAN-LIKE OR MACHINE-LIKE

“Introducing human-like features to AI bots (e.g., conversational empathy, gratitude) reduced unethical user behavior by up to 18.5%.”

AI increases unethical consumer behavior due to reduced anticipatory guilt. *Journal of the Academy of Marketing Science* (2023).

MAKING AI CHATBOTS MORE HUMAN-LIKE OR MACHINE-LIKE

Make Your AI More Human-Like To Reduce Instances of Fraud

Research Findings

- People were 34.7% more likely to engage in unethical behavior (e.g., false product return claims) when interacting with AI service agents compared to human agents.
- People felt less guilt when interacting with AI chatbots than human agents, which increased their likelihood of unethical actions.
- Introducing human-like features to AI chatbots (e.g., conversational empathy, gratitude) reduced unethical behavior by up to 18.5%.

Practical Implications

- Design AI bots with human-like features, such as empathy and gratitude, when there is a risk of fraud.
- For particularly sensitive tasks (e.g., processing refunds or addressing complaints), try to complement AI with a human presence or frame interactions as a partnership between AI and human agents.

What Drives This

- People perceive AI as lacking emotional capacity and moral judgment. This reduces guilt, which typically prevents unethical actions.
- Human-like AI builds stronger emotional connections and encourages more ethical behavior.

Limitations

- The studies focused on specific contexts, such as product returns, which may not generalize to other forms of unethical behavior.
- Findings were based on short-term interactions. The impact of repeated interactions with AI on ethical behavior remains unexamined.

Research: Kim, T. W., Lee, H., Kim, M. Y., Kim, S., & Duhachek, A. AI increases unethical consumer behavior due to reduced anticipatory guilt. *Journal of the Academy of Marketing Science* (2023).

MAKING AI CHATBOTS MORE HUMAN-LIKE OR MACHINE-LIKE

Avoid Comparing AI Chatbots Directly to Human Relationships

Research Findings

- People see AI as always available and a non-judgmental companion. However, it does not fulfill or perform emotional understanding and mutual care of relationships.
- AI relationships were rated 124.3% less “true” than human relationships but up to 38.3% more available and 66.9% less judgmental.

Practical Implications

- Highlight AI’s unique strengths, such as 24/7 availability and non-judgmental support.
- Avoid direct comparisons to human relationships; focus on complementary roles AI can play, such as mentorship or productivity (vs. friendship or romance), where emotional fulfillment is less critical.

What Drives This

- People believe AI is unable to understand or feel emotions, which makes relationships with AI one-sided. This makes people less accepting of them.

Limitations

- Results are based on perceptions of AI companions in friendship and romantic contexts. Domains like education or task assistance were not directly tested.
- The studies measured short-term interactions and did not explore long-term relationship building with AI companions.

KNOWLEDGE AT WHARTON

Learn more in this space:
Can an AI Chatbot be Your Friend?

Scientific research from
Wharton University of Pennsylvania

De Freitas, J., Uğuralp, Z., Uğuralp, A. K., & Puntoni, S. Why Most Resist AI Companions (2025).

THE WHARTON BLUEPRINT FOR EFFECTIVE AI CHATBOTS

“AI's ability to produce emotional expression without experiencing emotions is a key contrast with humans. AI can generate perfect emotional expressions but lacks the consciousness and self-awareness that underlies emotions. This is a decoupling of consciousness from intelligence.”

Stefano Puntoni,

PROFESSOR OF MARKETING, THE WHARTON SCHOOL, UNIVERSITY OF PENNSYLVANIA

MAKING AI CHATBOTS MORE HUMAN-LIKE OR MACHINE-LIKE

“People were 12.5% more likely to accept product recommendations from a flattering AI (e.g., “This bag would fit your amazing style”) compared to a non-flattering one.”

The persuasive power of AI ingratiation: A persuasion knowledge theory perspective. *Journal of the Association for Consumer Research* (2024).

MAKING AI CHATBOTS MORE HUMAN-LIKE OR MACHINE-LIKE

Use Flattery From Machine-Like Chatbots

Research Findings

- People were 12.5% more likely to accept product recommendations from a flattering AI (e.g., “This purse would absolutely fit your style!”) compared to a non-flattering one.
- People trusted machine-like AI flattering recommendations more (i.e., they felt less suspicion of manipulative intent and ingenuine flattery) compared to human-like AI.

Practical Implications

- Program AI to use flattery (e.g., “This scarf would go perfectly with your winter coat!”) or express agreement to increase acceptance of product recommendations.
- Design AI to appear machine-like in these contexts to reduce customer suspicion and enhance trust.

What Drives This

- People believe that machines lack ulterior motives, so they believe machine-like AI is less manipulative than human-like AI.
- This reduces people’s psychological defense against persuasion and makes them more likely to accept recommendations.

Limitations

- There may be a tipping point where people perceive AI flattery as manipulative or insincere. It’s unclear where that is.

Research: Usman, U., Kim, T. W., Garvey, A., & Duhachek, A. The persuasive power of AI ingratiation: A persuasion knowledge theory perspective. Journal of the Association for Consumer Research (2024).

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