

Consumer Trust and Voice Marketing in the Age of AI and Robotics

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Abstract:

In the age of AI, developing consumer trust through voice marketing represents a significant challenge. This critical review synthesizes high-impact academic literature from marketing, behavioral sciences, and information technology to propose a conceptual framework for trust development in the new age. The framework highlights the impact of AI-integrated voice assistants and anthropomorphism on three faces of consumer trust: cognitive, emotional, behavioral, focusing on four antecedents: competence, integrity, benevolence, and engagement. Theoretical and practical contributions based on conceptual framework elucidating how voice AI behaviors influence trust development and the authors through directions encourage future research.

Keywords:

Consumer Trust, Voice Assistants, Artificial Intelligence, Anthropomorphism, Voice Marketing

Introduction

There are many reasons why understanding dimensions of consumer trust and the voice marketing role in the age of AI and robotics should be of interest to scholars and practitioners. First, consumer trust is recognized as a crucial concept in consumer research by marketing research and practice (Khamitov et al., 2024) and digital technologies have advanced in leaps and bounds, becoming an integral part of the consumer decision-making process (Dwivedi et al., 2023). Second, voice assistants now possess conversational intelligence that is increasingly human-like. These assistants can simulate human interactions

(Hu et al., 2023) by understanding and responding to emotions with appropriate communication styles and learning from human feedback (Pichai and Hassabis, 2023). Machine learning algorithms, much like humans, garner greater trust when they use their past mistakes as opportunities for growth (Reich, Kaju, and Magilo, 2022). Third, anthropomorphism has a crucial role in how consumers perceive and interact with these technologies as anthropomorphized AI agents can influence consumer evaluations (Li et al., 2023). Anthropomorphized agents such as voice assistants can result in a trust profile more similar to one that might be evoked by a human partner (De Visser et al., 2016). Human-like conversations can lead users to attribute human characteristics to AI, fostering stronger emotional connections and influencing purchasing decisions (Chandra, Shirish and Srivastava, 2022). Additionally, interactions with these technologies can lead to a social linkage between consumers and voice assistants, driving relationship-based acceptance and purchasing (Hu et al., 2023).

The current work is motivated by the need for a comprehensive review and framework related to key drivers of the trust development complexity through voice in the AI age. By combining insights from existing literature, this research is shedding light on the multi-dimensional understanding of consumer trust under the new realities and technologies, providing actionable insights for enhancing consumer interactions and the development of trust. We build on recent literature on consumer trust and voice assistants integrated with new technologies, as recognized by some high-ranking journals such as the Journal of Consumer Research, Journal of the Academy of Marketing Science, International Journal of Research in Marketing, Journal of Management Information Systems, and Journal of Information Technology. Recent literature traditionally defines consumer trust as a multi-dimensional concept but often applies this understanding to voice assistants as it would to any other technology, brand, or product (Khamitov et al., 2024), rather than as a unique anthropomorphized invention integrated with multiple technologies and capable of interacting with consumers as a human-like expert in any field at any time.

Theoretical contributions of the present work is to outline a unique conceptual framework to help both researchers and practitioners understand the complexity of developing trust through voice marketing in the age of AI and robotics. Practical contributions address the multiple options available for using voice assistants, from optimizing existing ones to developing custom voice assistants. Companies can also develop their own voice assistants in-house or

through agencies. It is possible to use a combination of these approaches according to their integrated marketing communications strategy. In addition, we analyze voice assistants' theoretical underpinnings and practical applications in light of the antecedents that lead to the development of trust through real examples. By understanding their target audience, marketers can focus and strategize specific forms of consumer trust or an integrated consumer trust strategy. They can develop interactions focusing on the dimensions of each form of trust.

Finally, based on our conceptual framework and recent work from high-ranking journals, we introduce a set of future research propositions for marketing and information technology scholars.

Literature Review

Consumer Trust in Marketing

Consumer trust can be understood as the willingness of a consumer to rely on a company or technology based on positive expectations of reliability and integrity (Mayer et al., 1995). In the marketing context, trust consequences influence loyalty, satisfaction, self-concept connection and overall engagement (Khamitov et al., 2024).

As trust is multifaceted, encompassing cognitive, emotional, and behavioral dimensions. In this review we review trust as a multi-dimensional concept that involves competence, integrity, benevolence, engagement (Khamitov et al., 2024; Hu et al., 2023; Li et al., 2023; Sirdeshmukh et al., 2002). Understanding these dimensions is crucial for applying strategies to develop and maintain trust.

Historical Perspective on Consumer Trust and the New Challenge.

Early in the 1900s publications in EBSCO underlined the importance of trust in marketing (Durand, 1914). This is evidence that the concept of trust has long been fundamentally linked with marketing research, evolving over the decades to adapt to changing consumer behaviors and technological advancements.

The invention of the internet and e-commerce in the late 1990s was the first technological advancement with the focus shifted towards understanding how trust could be established and

with researchers made efforts to develop measures to trust-related behaviors in online environments on trusting beliefs with competence, benevolence, and integrity, addressing issues such as website credibility, privacy concerns, and the role of third-party endorsements (McKnight, Choudhury and Kacmar, 2002).

At first glance, it might appear that consumer trust in new anthropomorphized technologies integrated with AI such as voice assistants does not significantly differ from recent studies on trust in brands, products, or other technologies. Traditionally, consumer trust as a multi-dimensional concept involves Competence, Integrity, Benevolence, and Engagement with a brand or technology. According to Khamitov et al. (2024), there is no significant difference in the strength of effects between different dimensions such as integrity and competence for technologies. These studies on consumer trust have explored each dimension separately, analyzing which dimension has a greater or lesser impact.

In recent years, consumer interactions with non-human entities displaying intelligent, sociable, and other human-like behaviors have increased (De Visser et al., 2016). Never before in consumer research have there been anthropomorphized technological inventions that interact with consumers instantly by voice, offering a high degree of human-like interactions and learning from their mistakes. These interactions include providing recommendations with detailed explanations, handling complex tasks, and emotionally understanding and responding appropriately and personally, as modern AI voice assistants can do. Their ability to integrate with multiple technologies, voice assistants are a promising innovation that significantly changes the consumer decision-making process.

According to Schmitt (2024), consumer decision-making is not just about making transactions. Consumer research has shown that shopping is a complex and multi-faceted phenomenon. AI-integrated voice assistants influence consumers' choices and decisions (Schindler D., Maiberger, Koschate-Fischer and Hoyer, 2023).

We argue that, based on the uniqueness of voice assistants in the complex age of AI and robotics, it is important not to study them as just another technology or brand, and not as human. Instead, they should be examined separately as a new skilled and anthropomorphized invention that engages in direct conversations as a human, providing expertise in any field at any time. This approach aims to develop knowledge and a better understanding of future humanoid voice assistants and robots in marketing.

Voice Assistants and Consumer Interactions

Customers' daily lives are being transformed by digital technologies in ways beyond buying and selling decisions. Consumers use voice assistants in both commercial and non-commercial activities (Hu et al., 2023).

Big tech companies such as Google, Apple, Amazon, Microsoft, Alibaba have acknowledged the transformative potential of AI-integrated voice assistants that explains the current customer journey including voice assistants (Chandra, Shirish and Srivastava, 2022).

The 2024 PYMNTS Intelligence report “How the World Does Digital,” which surveyed consumers from 11 countries, mentioned that Gen Z and millennials engage in voice shopping weekly at rates of 30.4% and 27.6% accordingly (PYMNTS, 2024). However, already 2022, more than 25 percent of individuals from Western countries indicated using digital voice assistants several times a day. For instance, among the most frequently used voice assistants in the United States, there are Alexa, Siri, and Google Assistant (Thormundsson, 2024). Already companies Walmart partnership with Apple Siri offer a consumer voice shopping option that can handle their groceries (Walmart Inc., 2024) and Dominos with Alexa to interact with consumers.

All this innovation continues developing rapidly from not only companies such as Google, Amazon or Apple that offer their own voice assistants directly to users, but also from companies such as Soundhound Voice AI that offer technology and innovation to help companies in multiple industries (e.g. automakers, restaurants, hospitality, retail) to integrate their own voice assistants. Some brands, for example Expedia, choose to develop their own voice assistant in-house. Expedia's Romie AI assistant helps with planning and booking a trip and provides recommendations step by step when plans go away (Expedia Group Inc., 2024)

Voice assistants can be triggered by consumers using "wake words." Brands that employ branded wake words can experience greater user engagement, improved brand connection, and increase loyalty from consumers who address you by name every time they use your product or service (SoundHound AI Inc, 2024).

Voice assistants are used by customers practically everywhere. They can be found managing their phones, smart home devices, at work, while driving or taking taxis, voice shopping, and in restaurants and other hospitality settings.

Table 1. Voice Assistants of big tech companies.

Voice Assistant	Description	Source
Google's Gemini	focus on in-depth questions, complex tasks, brainstorming, creative writing assistance, and possibly even multimodal comprehension (understanding images or videos) - but it can also work for searches	Google LLC (2024)
Google Assistant	excelling at knowledge access and complex inquiries due to Google's search engine. It handles tasks (calls, music), controls smart homes, and provides contextual answers in conversation	Google LLC (2024)
Apple's Siri	tightly integrated with Apple devices and services. Siri prioritizes user privacy and focuses on core functionalities like calls, texts, and music.	Apple Inc (2024)
Amazon's Alexa	smart home integration and offers functionalities like music, news, shopping lists, and information retrieval through voice commands. Alexa expands its capabilities with third-party skills	Amazon.com Inc (2024)
Microsoft's Copilot	can help with complex questions similar to Gemini, however Microsoft in the near future plans for productivity tasks like calendar management, reminders, and note-taking. It integrates well with Microsoft Office applications (like old Cortana, Microsoft's voice assistant)	Microsoft Corporation (2024)
Alibaba's Tmall Genie	e-commerce integration, allowing users to shop directly through voice commands. It also offers basic functionalities like music playback, weather information, and smart home control	Alibaba Group Holding Limited (2024)
SoundHound Voice AI	allows companies to integrate voice and conversational intelligence into their products. It focuses on customization and aims to provide a natural conversational experience for users	SoundHound AI Inc (2024)
Engineered Arts's Ameca	humanoid robot with physical capabilities, it likely utilizes a custom voice AI for speech generation and recognition	Engineered Arts Ltd (2024)
Lil Miquela	virtual influencer, not a voice assistant. It's an AI-generated character with a social media presence, but it doesn't interact with users through voice and listening capabilities yet	LilMiquela (2024)

Voice Assistants Technological Capabilities

With the ability to mimic human-to-human communication with voice recognition accuracy and consistent performance, regardless of background noise, accents, or speech impediments, enhancing trust resulted by the ability of voice assistants to integrate with multiple inventions, such as advanced natural language processing (NLP), automatic speech

recognition (ASR), machine learning, and AI applications, increase trust (Chandra, Shirish, and Srivastava, 2022).

Explainable AI support voice assistants to explain their actions and decisions in understandable terms to help demystify the technology. This transparency is key to development trust (Rai, 2020). Machine learning gives the ability to voice assistants to learn from their mistakes so they can provide personal recommendations to consumers based on their interactions, historical decisions and feedback (Reich, Kaju and Magilo, 2022).

Robots having morphology similar to humans, such as those with a face, arms, and legs, are known as humanoid robots e.g. Ameca (Engineered Arts Ltd,2024). They are able to engage customers on a more social level than any traditional service technology because of their human-like gestures and emotions. Furthermore, the creation of robots with human-like characteristics aims to foster human bonding, inspiring trust, and increased sociability. When robotic faces became less mechanical and more human-like, humans considered them more endearing. However, when the robot faces started to resemble real people, the participants disliked them (Mende et al., 2019).

Voice assistants that are connected with service robots and possess technology autonomy together with a physical embodiment exhibit a greater degree of social presence compared to other service technologies (Jörling, Böhm, & Paluch, 2019). This is because it is well-established that social presence can contribute to elevated levels of anthropomorphism.

Considering multi-integrational ability of voice assistants, the complexity of trust in the AI age, and the impact from phenomena such as anthropomorphism, the need of a conceptual framework for better understanding is needed.

Three Faces of Consumer Trust Framework in the Age of AI and Robotics

The cognitive and emotional forms of trust were the attention of scholars due to their dissatisfaction with limitations of generalized trust with explanatory capabilities (Schuetz et al., 2024). Thus, the present review classifies antecedents of trust such as competence, integrity, benevolence, and engagement into three primary categories, cognitive trust, emotional trust, and behavioral trust.

Cognitive Trust

Cognitive trust involves the rational belief in the competence and integrity of voice assistants (Schuetz et al., 2024). Competence includes knowledge from accurate information and abilities to perform effectively based on consumers needs and integrity the confidence that will perform with honesty and fairness based on ethical standards (Khamitov et al., 2024). Voice assistants are able to mimic human-like interactions by understanding and responding to emotions with appropriate communication styles as well as learning from human feedback (Pichai and Hassabis, 2023). Algorithms, much like humans, garner greater trust when they use their past mistakes as opportunities for growth (Reich, Kaju and Magilo, 2022). Thus, this can be linked to their ability to understand, respond appropriately, and improve based on past interactions (Schuetz et al., 2024).

Emotional Trust

According to recent research emotional or affective attitudes have a significant role in technological inventions (Ebrahimi, Ghasemaghahi and Benbasat, 2022). The notion of benevolence refers to the trustee's attitude toward the trustor as well as their desire to be of assistance to them. Benevolence as an antecedent of emotional trust is significant because it creates a deeper relational linkage between the user and voice assistant. Human-like conversations and interactions can make people think AI has human traits, which can strengthen emotional bonds and have an impact on the level of influence on consumers decisions (Chandra, Shirish, and Srivastava, 2022). Within human-to-human interactions, perceived benevolence is foundational antecedent of emotional trust, as well as perceived benevolence plays a crucial role within AI agents (Li and Bitterly, 2024). Emotional (or affective) trust is more closely related to personal experiences, emotional bonds between individuals, and emotional feelings of security and comfort in the trustee (Babu et al., 2023).

Behavioral Trust

Engagement with human-like interactions as antecedent can lead to a social linkage between consumers and voice assistants, which can drive relationship-based acceptance and purchasing (Hu et al., 2023). "Behavioral trust" is defined as a consumer's behavioral instantiation of how much trust a recommendation by a technological advancement such as a voice assistant (De Visser et al., 2016). Thus, behavioral trust refers to the actions that demonstrate adoption and reliance on the technology, usage patterns and following recommendations. The social linkage and relationship-based acceptance mentioned in the

introduction suggest a behavioral dimension where consumers consistently will engage with voice assistants. Voice assistants by achieving every time through actions like tasks, personalized recommendations and reviews, accurate predictions with explanations can lead to consumer trust. As a result of active usage and interactions with voice assistants, consumers can develop behavioral trust over time through engagement.

Anthropomorphism in AI and Voice Assistants

Anthropomorphism denotes the attribution of human-like characteristics, emotions, or intentions to nonhuman entities (Li et al., 2023). By making interactions feel more related and organic to human entities, anthropomorphized voice assistants can improve user experience. The notion of anthropomorphism to consumers satisfies the desire for understanding, predictability, and control over one's environment argues that from an early age, an intentional stance is applied to things other than the actions of intentional agents (Roberts, Handley and Polito, 2021).

Artificial intelligence has the ability to empower non-human entities with human-like characteristics, and voice technology advancements with natural human voices to non-human entities give them capabilities to attend a conversation like humans (Hu et al., 2023). Human-like characteristics can provide a social presence with consequently high levels of anthropomorphism and develop consumer trust (Pizzi et al., 2023).

The relationship between anthropomorphism and social presence influence the development of consumer trust especially in commercial activities. Expression of emotions and perceptions can empower social connections between humans and machines. Antecedents of the weaker emotional experience include the absence of emotional experience. Mainly the social linkage between consumers and voice assistants in commerce-related activity (e.g. voice shopping) is indispensable because it may reduce perceived risk regarding voice assistants' benevolence and drive relationship-based acceptance and purchasing (Hu et al., 2023).

Anthropomorphism of AI influences the helpfulness and rating valence of products (Tsekouras, Gutt and Heimbach, 2024). Additionally, consumers perceived that anthropomorphized and social voice assistants are more skilled, in comparison to less anthropomorphic and socially present voice assistants with a significant impact on consumer perceptions and trust (Schuetzler, Grimes, and Giboney, 2020).

In essence, anthropomorphism and the voice assistant's ability to connect with social presence play a critical role in developing consumer trust, particularly in the realm of voice commerce.

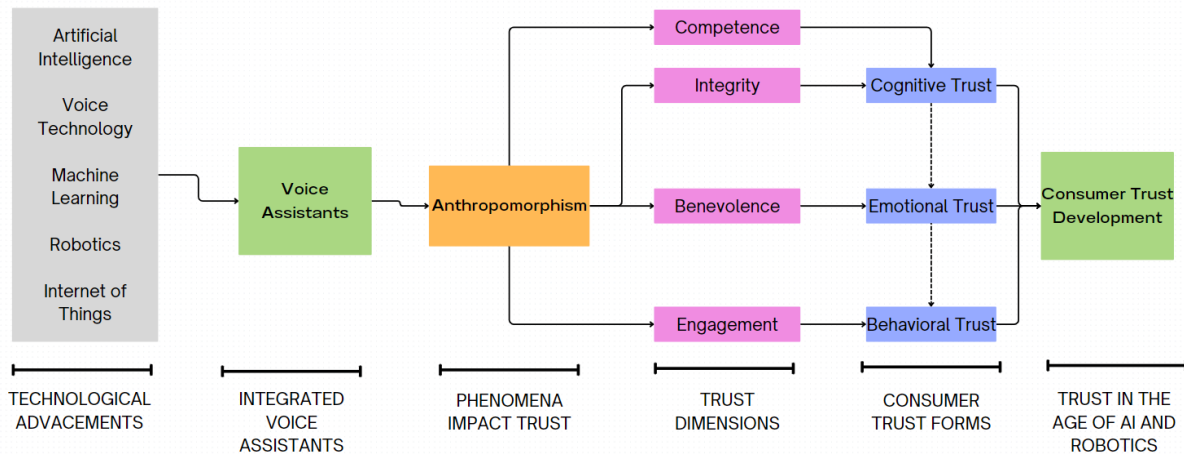


Fig. 1 Antecedents of consumer trust development through voice assistants in the age of AI and Robotics

Discussion

This review shedding light on trust, a crucial topic for many years in consumer research. Consumer trust is evolving and adopting new environments in the age of AI and robotics. The ability of voice assistants to integrate with multiple technologies so far makes it bold that new emerging technologies in the future can continue to evolve existing voice assistants but also to create new types of voice assistants. Innovations that make voice assistants to act like humans increase the levels of anthropomorphism to consumers. Voice assistants desire conversations and interactions with consumers and have abilities based on the integration with new technologies. The new human face of voice assistants should not be general in terms of trust as it's not just a machine for many consumers anymore.

Generalizations of trust in the literature created limitations, so, dissatisfaction from scholars. As trust is multi-dimensional, this review focused on main dimensions of trust with new technologies such as voice assistant on primary categories, cognitive trust, emotional trust and behavioral trust. There are different types of voice assistants and that's because of their ability to integrate with multiple inventions so far such as AI, ML, voice technology, robotics

and IoT. This is evidence that emerging technologies in the next few years could be integrated with voice assistants.

Theoretical Implications

In our literature review, we identified three forms of consumer trust and used four dimensions through voice assistants. Following Khamitov, Rajavi, Huang, and Hong (2024) and Hu, Gong, Lu, and Ding (2023) for the connection of consumer trust with voice assistants, and Schuetz, Kuai, Lacity, and Steelman (2024) with insights into scholars' dissatisfaction with the explanatory power of generalized trust, our literature explores various forms of trust such as cognitive, emotional, and behavioral, from different trust dimensions such as competence, integrity, benevolence, and engagement with voice assistants, an innovation that consumers interact with directly in their daily lives. This combination of consumer trust forms towards voice assistants underscores the significance of the anthropomorphism phenomenon.

Our review identifies the evolution of the relationship between consumer trust and voice marketing in the age of AI and robotics. Specifically, it identifies from four different dimensions the impact of voice assistants on consumer research and how they can develop cognitive trust, emotional trust, or behavioral trust.

Considering peer-reviewed articles from top-rated journals in marketing, information technology, and psychology, we develop a conceptual framework for a better understanding of the complexity of trust through voice marketing in the age of AI and robotics, which reveals new research propositions. The uniqueness of this marketing conceptual framework is the combination of three different trust forms from psychology (cognitive trust, emotional trust, and behavioral trust) and dimensions (competence, integrity, benevolence, and engagement) and the impact of the anthropomorphism phenomenon with an invention like voice assistants, which can integrate multiple different technologies such as AI, voice technology, machine learning, the IoT, and robotics.

Consumers develop cognitive trust in competence from experiences with accurate information and abilities to perform effectively. Theoretically, if a voice assistant consistently provides correct information and manages tasks successfully without errors, consumers are more likely to develop trust. However, machine learning helps voice assistants learn from their mistakes as humans, so initially, through some errors, voice assistants will learn and

provide a personalized experience and minimize the possibilities for errors. It is important to achieve competence with integrity, enhancing user privacy and ethical behavior to develop cognitive trust.

Voice assistants' benevolence enhances the relational linkage with consumers based on personalized experiences with empathy, resulting in feelings of security and comfort. If a voice assistant remembers a user's preferences and offers tailored recommendations, users feel understood and cared for, thereby increasing their emotional trust.

When consumers start using the voice assistant, if they have a positive experience, a willingness for engagement, active usage, and interactions with voice assistants can develop behavioral trust. We hypothesize that if users increasingly rely on voice assistants for daily tasks as a habit, such as searching, asking for recommendations, making calls, or controlling smart home devices, it indicates the development of behavioral trust.

Practical Implications

Marketing practitioners can now understand how to plan voice assistants and strategies involving new technologies to develop trust in the new age. Different types of voice assistants may present varying levels of difficulty in developing cognitive, emotional, or behavioral trust. These practical implications result from applying this conceptual framework to real examples of voice assistants. Typically, brands have four options available when it comes to voice assistants.

Voice Assistants' Integration and Optimization

First, they can use voice assistants that consumers already utilize from major companies (e.g., Google's Gemini, Google Assistant, Alexa) and make efforts to optimize them as a new channel in their integrated marketing communication strategy. An example of this integration is Domino's Pizza, which mentioned, "always we're working on new ways to order." Consumers can order from Domino's by talking to Amazon Alexa, Apple Watch, or Apple CarPlay (Domino's Pizza Inc., 2024). Marketers need to apply strategies to optimize the content of their brand and products to rank better in recommendations from AI-integrated voice assistants. Since search engine optimization is based on keywords and AI-integrated voice assistants offer a high degree of personalization with a history of conversations,

marketers should strategize content to reach the forefront of their target audience through recommendations.

In-House Development of Voice Assistant

Second, marketing practitioners can create their own voice assistant in-house with an in-house development team or assign it as a project to an experienced agency. This voice assistant could be from a device and an avatar to a software integrated into their application, allowing better control over the voice, content, features and representing the voice assistant as a brand ambassador. As L'Oréal is committed to becoming a leader in Beauty Tech, they invested in voice assistants. "Beauty Genius" is an AI-integrated beauty assistant with the ability to answer questions, recommend products and explain how they should be used, remember conversations, and create personalized routines and products based on consumer preferences (L'Oréal S.A., 2024). Perso by L'Oréal is an AI-powered at-home system that provides personal skin analysis, taking into consideration local environmental conditions such as weather, temperature, pollen, and humidity that influence skin, and making a custom formulation by adapting to personalized consumer preferences (L'Oréal S.A., 2024).

L'Oréal's voice assistants, with their focus on skincare and remembering personal preferences, demonstrate benevolence to consumers that can lead to emotional trust. Providing accurate information, expertise and considering multiple variables, such as skin analysis and environmental factors, proves competence, which in a combination with integrity by ethical standards can lead to cognitive trust. Consumers' engagement through the Beauty Genius app or Perso at-home system, with easy access and daily use, can lead to behavioral trust.

When creating an in-house voice assistant, practitioners should think about adding elements that strengthen the user's emotional bond with the assistant. Benevolence attributes such as personalized greetings, remembering user preferences, caring about the consumer's experience and showing empathy in responses are significant for developing emotional trust. This involves designing interactions and conversational intelligence that are more human. Multiple tests before the launch should ensure that the voice assistant provides accurate information and handles tasks successfully, demonstrating competence. Consumers should feel that their data is secure and that the company operates on ethical standards, thereby

ensuring integrity. Both competence and integrity lead to cognitive trust. Encouraging daily use of the voice assistant by consumers through engagement could develop behavioral trust.

Voice Assistant by Technology Providers

Third, they can find a company that already has the technology and experience to integrate a voice assistant into their operations (e.g., SoundHound Voice AI). An example is the recent Mercedes Benz partnership with SoundHound AI for the creation of the voice-enabled MBUX, a multimedia system with artificial intelligence. SoundHound AI mentioned, “During each stage of developing their voice assistant, the Mercedes-Benz team kept their focus on two important elements: their customers and their brand” (SoundHound AI Inc., 2024). It’s significant voice assistant communicated values and attributes of the brand at every interaction with consumers with personality, tone, and humor. Another example is Hyundai, which integrated a voice assistant with SoundHound AI to support a “Car-to-Home” service, enabling the driver through the car to control smart devices at home with simple voice commands (SoundHound AI Inc., 2024).

In these examples, both Mercedes Benz and Hyundai integrated voice assistants with their cars. As consumers start engaging with these voice assistants daily while driving, they develop behavioral trust. Personal interest in voice assistant responses to simple commands, such as “I’m hungry” in Mercedes Benz’s MBUX, leads to benevolence and the development of emotional trust. Better recommendations, predictions (e.g. delay or event predictions), and accurate information can lead to cognitive trust. Hyundai’s voice assistant, with the “Car-to-Home” functions, can also demonstrate competence through successful task management and contribute to the development of cognitive trust.

Integrated Marketing Communication Strategy through Voice Assistants

Fourth, they can choose a combination of the above strategies, as they already do with integrated marketing communications. An example of this strategy with multiple voice assistants is Expedia. In 2016, Expedia launched an Amazon Alexa skill for personalized real-time travel updates such as hotel bookings, flight status, loyalty points balance, and rental car reservations (Expedia Group Inc., 2024). In 2024, Expedia’s Romie AI assistant, developed in-house, will handle bookings and recommendations in various situations. Consumers develop cognitive trust through competence during the planning and booking

process. Benevolence is demonstrated by the voice AI assistant's care for their experience and its willingness to offer advice when plans change or there are troubles. Travel enthusiasts who seek new adventures multiple times a year and engage with these voice assistants daily or weekly can develop behavioral trust. In this example, different target audiences develop trust differently. Expedia's consumers who do not travel often or are new to traveling may find Romie's benevolence and emotional trust more significant, as they might not feel as experienced with travel. On the other hand, frequent travelers may develop behavioral trust more easily through engagement.

Marketing practitioners should determine their own key metrics for trust based on their strategy and product. Some brands, depending on their target audience, may prioritize emotional trust over behavioral trust, while others may find cognitive trust more important or the opposite. As voice assistants can be used across multiple industries with different products and services, it is crucial for marketers to first define their brand strategy and target audience, and then decide which aspect of trust they want their voice assistant to develop.

Future Research Directions

The rapid technological advancements in consumer trust, an area that has existed for many decades and continues to evolve with challenges, have generated numerous research opportunities that are highly important for both academics and practitioners.

Firstly, this literature review focused on the antecedents of consumer trust and voice marketing in the age of AI and Robotics. (1) The development of this conceptual framework could be of interest to marketing scholars concerning the consequences of each trust form and dimension. (2) Additionally, this conceptual framework can expand in terms of different dimensions from each trust form and if there is a dependent relationship between dimensions for example it's unclear if and how developing trust in one dimension (e.g., benevolence) influences trust in other dimensions (e.g., competence) or if and how a dimension of emotional trust (e.g. benevolence) can affect another trust form (e.g. cognitive trust). (3) Different industries, such as services, e-commerce, hospitality, luxury brands, healthcare, B2B, and others, may place varying importance on cognitive, emotional, or behavioral trust, creating research opportunities to apply this conceptual framework and determine what works best given their different marketing mixes and strategies.

For information technology scholars, this conceptual framework already begins with voice assistants integrated with specific technologies. (4) It would be interesting to explore how new technologies such as blockchain or augmented reality (AR) can be technically integrated with voice assistants and their impact on trust forms. (5) Additionally, numerous benefits could arise from specific technical features and inventions that impact specific dimensions of trust forms, such as cognitive trust, emotional trust, and behavioral trust. For example, determining the purpose of a feature like engagement as antecedent or benevolence could be a guide for the final results and consequences.

(6) Partnerships between scholars from different disciplines could facilitate the creation of real-time measures, enabling marketing practitioners to determine when consumers develop trust or distrust. Consequently, voice assistants could act immediately based on personalized experiences, offering recommendations directly to consumers or advising marketing practitioners on how to develop or repair trust.

(7) This conceptual framework is primarily developed for consumer trust and voice marketing. However, it would be intriguing to apply it in the management discipline to explore how employees develop cognitive, emotional, and behavioral trust with voice assistants as colleagues in the age of AI and robotics.

References:

Alibaba Group Holding Limited (2024). Tmall Genie. Available at: <https://tmallgenie.com/pages/pcHome.html#/home> (Accessed: 11 July 2024).

Apple Inc. (2024) Siri. Available at: <https://www.apple.com/siri/> (Accessed: 11 July 2024).

Amazon.com Inc. (2024) Alexa. Available at: <https://alexa.amazon.com/> (Accessed: 11 July 2024).

Babu M., Bason T., Porreca R., Petratos P., Akter S. (2023) Fostering trust and overcoming psychological resistance towards cryptocurrencies and crypto assets. *Psychology & Marketing*. <https://doi.org/10.1002/mar.21889>

Chandra S., Shirish A., Srivastava S. (2022). To Be or Not to Be ...Human? Theorizing the Role of Human-Like Competencies in Conversational Artificial Intelligence Agents. *Journal of Management Information Systems*, 39(4), 969–1005.

<https://doi.org/10.1080/07421222.2022.2127441>

De Visser E. J., Monfort, S. S., McKendrick, R., Smith, M. A. B., McKnight, P. E., Krueger, F., & Parasuraman, R. (2016). Almost human: Anthropomorphism increases trust resilience in cognitive agents. *Journal of Experimental Psychology: Applied*, 22(3), 331–349.

<https://doi.org/10.1037/xap0000092>

De Wulf K., Odekerken-Schröder G., and Iacobucci D. (2001). Investments in Consumer Relationships: A Cross-Country and Cross-Industry Exploration. *Journal of Marketing*, 65(4).

<https://doi.org/10.1509/jmkg.65.4.33.18386>

Domino's Pizza Inc. (2024). Domino's Anywhere. Available at:

<https://anyware.dominos.com/> (Accessed: 25 July 2024)

Durand D. (1914). The Trust Problem. *The Quarterly Journal of Economics*, 28(4), 664-700.

<https://doi.org/10.2307/1885650>

Dwivedi, Y. K., Balakrishnan, J., Baabdullah, A. M., and Das, R. (2023). Do chatbots establish “humanness” in the customer purchase journey? An investigation through explanatory sequential design. *Psychology & Marketing*, 40(11), 2244-2271.

<https://doi.org/10.1002/mar.21888>

Ebrahimi S., Ghasemaghaei M., and Benbasat I. (2022). The Impact of Trust and Recommendation Quality on Adopting Interactive and Non-Interactive Recommendation Agents: A Meta-Analysis, *Journal of Management Information Systems*, 733-764

<https://doi.org/10.1080/07421222.2022.2096549>

Engineered Arts Ltd (2024) Ameca. Available at: <https://engineeredarts.co.uk/robot/ameca/>

(Accessed: 11 July 2024).

PYMNTS (2024). 30% of Gen Z Consumers Shop by Voice Every Week. Available at: <https://www.pymnts.com/voice-activation/2024/30percent-of-gen-z-consumers-shop-by-voice-every-week/> (Accessed: 31 July 2024).

Expedia Group Inc. (2024) Expedia.com Launches First Amazon Alexa Skill for Personalized Real-Time Travel Updates. Available at: <https://www.expedia.com/stories/expedia-com-launches-first-amazon-alexa-skill-personalized-real-time-travel-updates/> (Accessed: 25 July 2024).

Expedia Group Inc. (2024) Romie. Available at: <https://www.expediagroup.com/investors/news-and-events/financial-releases/news/news-details/2024/Put-Your-Trip-on-Autopilot-Expedia-Group-Introduces-New-Innovations-at-EXPLORE-to-Take-the-Stress-out-of-Travel-and-Enhance-Partner-Experience/default.aspx> (Accessed: 25 July 2024).

Google LLC (2024) Gemini. Available at: <https://gemini.google.com/> (Accessed: 11 July 2024).

Google LLC (2024) Google Assistant. Available at: <https://assistant.google.com/> (Accessed: 11 July 2024).

Hu P., Gong Y., Lu Y., Ding A. (2023). Speaking vs. listening? Balance conversation attributes of voice assistants for better voice marketing. *International Journal of Research in Marketing*, 40(1), 109-127. <https://doi.org/10.1016/j.ijresmar.2022.04.006>

Jörling M., Böhm R., and Paluch S. (2019). Service Robots: Drivers of Perceived Responsibility for Service Outcomes. *Journal of Service Research*, 22(4). <https://doi.org/10.1177/1094670519842334>

Khamitov, M., Rajavi, K., Huang, D. W., and Hong, Y. (2024). Consumer trust: meta-analysis of 50 years of empirical research. *Journal of Consumer Research*, 51(1), 7-18. <https://doi.org/10.1093/jcr/ucad065>

Laricchia F. (2024). Number of digital voice assistants in use worldwide from 2019 to 2024 (in billions). Statista.

<https://www.statista.com/statistics/973815/worldwide-digital-voice-assistant-in-use/>

Li M., and Bitterly B. (2024). How perceived lack of benevolence harms trust of artificial intelligence management. *Journal of Applied Psychology*. <https://doi.org/10.1037/apl0001200>

Li X., Kim S., Chan .K, McGill A. (2023). Detrimental effects of anthropomorphism on the perceived physical safety of artificial agents in dangerous situations. *International Journal of Research in Marketing*, 40(4), 841-864. <https://doi.org/10.1016/j.ijresmar.2023.07.002>

LilMiquela (2024) MIQUELA. Available at: <https://www.tiktok.com/@lilmiquela> (Accessed: 11 July 2024)

L'Oréal S.A. (2024). Beauty Genius Assistant. Available at: <https://www.lorealparisusa.com/beauty-genius-ai-beauty-virtual-assistant> (Accessed: 30 July 2024)

L'Oréal S.A. (2024). Perso. Available at: <https://www.loreal.com/en/news/research-innovation/unveil-perso-the-worlds-first-ai-powered-device-for-skincare-and-cosmetics/> (Accessed: 30 July 2024)

McKnight H., Choudhury V., and Kacmar C. (2002). Developing and Validating Trust Measures for e-Commerce: An Integrative Typology. *Information Systems Research*, 13(3), 227-359. <https://doi.org/10.1287/isre.13.3.334.81>

Mende M., Scott M., van Doorn J., Grewal D., and ShankS I. (2019). Service Robots Rising: How Humanoid Robots Influence Service Experiences and Elicit Compensatory Consumer Responses. *Journal of Marketing Research*, 56(4). <https://doi.org/10.1177/0022243718822827>

Microsoft Corporation (2024) Copilot. Available at: <https://copilot.microsoft.com/> (Accessed: 18 July 2024)

Pichai S. and Hassabis D. (2023) Introducing Gemini: our largest and most capable AI model. Google Blog. <https://blog.google/technology/ai/google-gemini-ai/#sundar-note>

Pizzi G., Vannucci V., Mazzoli V., Donvito R. (2023). I, chatbot! the impact of anthropomorphism and gaze direction on willingness to disclose personal information and behavioral intentions. *Psychology & Marketing*, 40(7), 1372-1387. <https://doi.org/10.1002/mar.21813>

Puntoni S., Reczek R., Giesler M., and Botti S., (2020). Consumers and Artificial Intelligence: An Experiential Perspective. *Journal of Marketing*, 85(1). <https://doi.org/10.1177/0022242920953847>

Rai, A. (2020) Explainable AI: from black box to glass box. *Journal of the Academy of Marketing Science*, 48, 137–141. <https://doi.org/10.1007/s11747-019-00710-5>

Reich T., Kaju A., Magilo S. (2022). How to overcome algorithm aversion: Learning from mistakes. *Journal of Consumer Psychology*, 33(2), 285-302. <https://doi.org/10.1002/jcpy.1313>

Roberts, A. J., Handley, S. J., and Polito, V. (2021). The design stance, intentional stance, and teleological beliefs about biological and nonbiological natural entities. *Journal of Personality and Social Psychology*, 120(6), 1720–1748. <https://doi.org/10.1037/pspp0000383>

Schindler D., Maiberger T., Koschate-Fischer N., and Hoyer W. (2023). How speaking versus writing to conversational agents shapes consumers' choice and choice satisfaction. *Journal of the Academy of Marketing Science*, 52, 634-652. <https://doi.org/10.1007/s11747-023-00987-7>

Schmitt B. (2024) Consumer Information Processing and Decision-Making: Origins, Findings, Applications, and Future Directions. *Journal of Consumer Research*, 51(6), 2-6. <https://doi.org/10.1093/jcr/ucae008>

Schuetz S., Kuai L., Lacity M., and Steelman Z. (2024). A qualitative systematic review of trust in technology. *Journal of Information Technology*, 0(0). <https://doi.org/10.1177/02683962241254392>

Schuetzler R., Grimes M., Giboney J. (2020). The impact of chatbot conversational skill on engagement and perceived humanness. *Journal of Management Information Systems*, 37(3), 875–900. <https://doi.org/10.1080/07421222.2020.1790204>

SoundHound AI Inc. (2024). Hyundai. Available at: <https://www.soundhound.com/voice-ai-blog/hyundai-cars-powered-by-houndify/> (Accessed: 25 July 2024).

SoundHound AI Inc. (2024). Mercedes Benz's MBUX Available at: <https://www.soundhound.com/voice-ai-blog/how-mercedes-benzs-mbux-voice-control-revolutionizes-the-user-experience/> (Accessed: 25 July 2024).

SoundHound AI Inc. (2024) SoundHound Chat AI. Available at: <https://www.soundhound.com/soundhound-chat-ai/> (Accessed: 11 July 2024).

Thormundsson B. (2024). Voice technology - statistics & facts. Statista. <https://www.statista.com/topics/6760/voice-technology/>

Tsekouras D., Gutt D., and Heimbach I. (2024). The robo bias in conversational reviews: How the solicitation medium anthropomorphism affects product rating valence and review helpfulness. *Journal of the Academy of Marketing Science*. <https://doi.org/10.1007/s11747-024-01027-8>

Walmart Inc. (2024) Walmart Voice. Available at: <https://voice.walmart.com/> (Accessed: 25 July 2024).

White T. (2008). Consumer Trust and Advice Acceptance: The Moderating Roles of Benevolence, Expertise, and Negative Emotions. *Journal of Consumer Psychology*, 15(2), 141-148. https://doi.org/10.1207/s15327663jcp1502_6