Exploring the Customer Journey of Voice Commerce: A Research Agenda

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Voice commerce creates unprecedented opportunities for consumers and vendor firms to interact, engage, and relate. With artificial intelligence–powered voice assistants, consumers can make technology-mediated purchases without using their tactile senses, which represents a new space for commercial interactions. Drawing on the customer journey as an organizing framework, this article proposes a structured research agenda, in an attempt to shed light on the bright side effects of voice commerce while also acknowledging concerns for consumer protection and society in general. Voice assistants can enhance every stage of the purchase journey, yet their use might have negative consequences for customer relationships. In the prepurchase stage, voice assistants can act as information curators or manipulators. In the purchase stage, voice assistants can adopt roles as shopping concierges or impediments. In the postpurchase and usage stage, voice assistants can become trusted relationship partners or hostile intruders in consumers' lives.

1. Introduction

Voice commerce—such that consumers rely on artificial intelligence (AI)–powered voice assistants to perform shopping tasks—is a rapidly growing area of e-commerce, with vast potential to change how consumers and vendor firms interact, engage, and relate to one another (Dellaert *et al.*, 2020; Mari and Algesheimer, 2021; Whang and Im, 2021). Unlike traditional e-commerce, for which consumers interact with vendors using input devices such as touch displays, a mouse, or a keyboard, voice assistants, due to their specific characteristics (e.g., hearing, understanding, interacting), enable consumers to make technology-mediated purchases without using their tactile senses. As a result, consumers gain more freedom to engage in shopping activities, even if operating tactile input devices would be inconvenient, mentally challenging, or otherwise impossible. Furthermore, voice assistants can function like shopping companions that provide consumers with information, understand and respond to their commands, and place orders on their behalf.

Such benefits have prompted the ubiquity of voice assistants (Bawack *et al.,* 2021): In 2020, 4.2 billion voice assistants were available to consumers worldwide, and this number is projected to grow to 8.4 billion by 2024 (Statista, 2020). They appear in regularly used electronic devices such as mobile phones, as well as smart speakers, which represent the fastest growing consumer electronics segment in recent years. These prevalent AI-powered voice assistants in turn may represent a disruptive technology for building and maintaining consumer–vendor relationships (Mari *et al.,* 2020). Their humanlike ability to listen to consumers and communicate in natural language makes them powerful agents for customer experience management throughout the customer journey. At every stage of the purchase process, voice assistants can enhance customer and vendor value, or they might exert negative effects on customer relationships. In the prepurchase stage, they can act as information curators or as manipulators. In the purchase stage, voice assistants might be shopping concierges, or they could be impediments. In the postpurchase and usage stage, voice assistants can function as trusted experience partners or as hostile intruders in consumers' lives.

To address these potential outcomes, we propose a structured agenda for voice commerce research. To organize our research agenda in a parsimonious way, we apply the customer journey framework and identify promising avenues for research along prepurchase, purchase, and postpurchase stages. We identify and discuss potential research questions pertaining to bright side and dark side effects of voice commerce and highlight concerns regarding customer protection and society in general. Because voice commerce mainly is developing in consumer markets, we focus on business-to-consumer (B2C) settings. In particular, we start by proposing a conceptualization of voice commerce and how it relates to and is distinct from e-commerce. Then we introduce the customer journey as an organizing framework to theorize about the bright and dark sides of voice commerce. Next, we discuss the role of voice assistants along the customer journey and identify promising research avenues. Finally, we wrap up our special research paper with a brief conclusion.

2. Conceptual Background

2.1. Voice Commerce

Voice commerce refers to purchases or sales of goods and services through digital channels with the aid of voice assistants (Mari *et al.,* 2020; Sun *et al.,* 2021). These voice assistants, as AI-powered software applications, communicate with consumers through natural, spoken language (Ewers *et al.,* 2020; Uysal *et al.,* 2022). Their commercialization has produced two main types: built into multipurpose devices such as smartphones, tablets, or notebooks (e.g., Apple's Siri, Microsoft's Cortana) or integral to standalone speaker devices (e.g., Amazon's Alexa). When they interact with these voice assistants, consumers listen to and speak with a humanoid, omnipresent agent that provides curated information, based on its foundational AI. In early applications, consumers mainly sought convenient assistance to complete everyday tasks, and popular voice assistant interactions involved simple commands, such as providing weather information, setting alarms or reminders, playing music, or initiating phone

calls (Mari *et al.*, 2020). Voice-based purchases of goods and services seemingly represent the next stage of voice assistant utilization.

More generally, e-commerce is defined as the buying and selling of goods and services via the Internet using fixed (e.g., personal computer) or mobile (e.g., smartphone) input devices (Lee *et al.*, 2007; Wareham *et al.*, 2005). In a sense then, voice commerce and e-commerce share an important characteristic: They both represent Internet-based channels through which consumers can purchase goods or services. Yet voice commerce also has specific characteristics that set it apart from traditional e-commerce (see Table 1). It relies on verbal communication, whereas traditional e-commerce employs visual and textual communication cues. Unlike e-commerce, which relies on sight and touch as primary senses, consumers interact with voice assistants through non-haptic, verbal-only operations, so the only sense involved is hearing. Furthermore, voice commerce offers a humanoid interface, powered by AI and natural spoken language; e-commerce interactions (e.g., with websites or apps) are more technical in nature. Due to voice assistants' ubiquitous presence (i.e., constant listening) and provision of a limited amount of curated information, voice commerce tends to be more proactive. E-commerce instead adopts a reactive, on-demand approach, and consumers self-select the information they want to process. Table 1 synthesizes these key defining features of voice commerce to delineate how it is similar to and also differs from traditional e-commerce formats.

Key Characteristic	Voice Commerce	Traditional E-Commerce
Purpose	Purchasing goods and services	Purchasing goods and services
Primary communication cues	Verbal	Visual, textual
Primary senses involved	Hearing	Sight and touch
Sending and receiving information	Speaking (sending) and listening (receiving)	Typing or touching (sending) and seeing or reading (receiving)
Appearance	Humanoid	Technical
Presence	Ubiquitous presence	On demand
Information presentation	Curated information	Self-selected information
Recognition of environmental cues	AI (voice recognizes what consumer is doing while communicating), tone, emotional state, proactive	Reactive

Tab. 1: Distinguishing Voice Commerce from Traditional E-Commerce

2.2. Customer Journey Framework

To clarify the unique characteristics of voice commerce, we turn to the customer journey framework, which consists of a three-stage cycle (Lemon and Verhoef, 2016). Voice commerce can support consumers' purchase-related activities throughout prepurchase, purchase, and postpurchase stages. Several stage-overarching contingency factors affect the voice commerce customer journey too, as Figure 1 indicates.
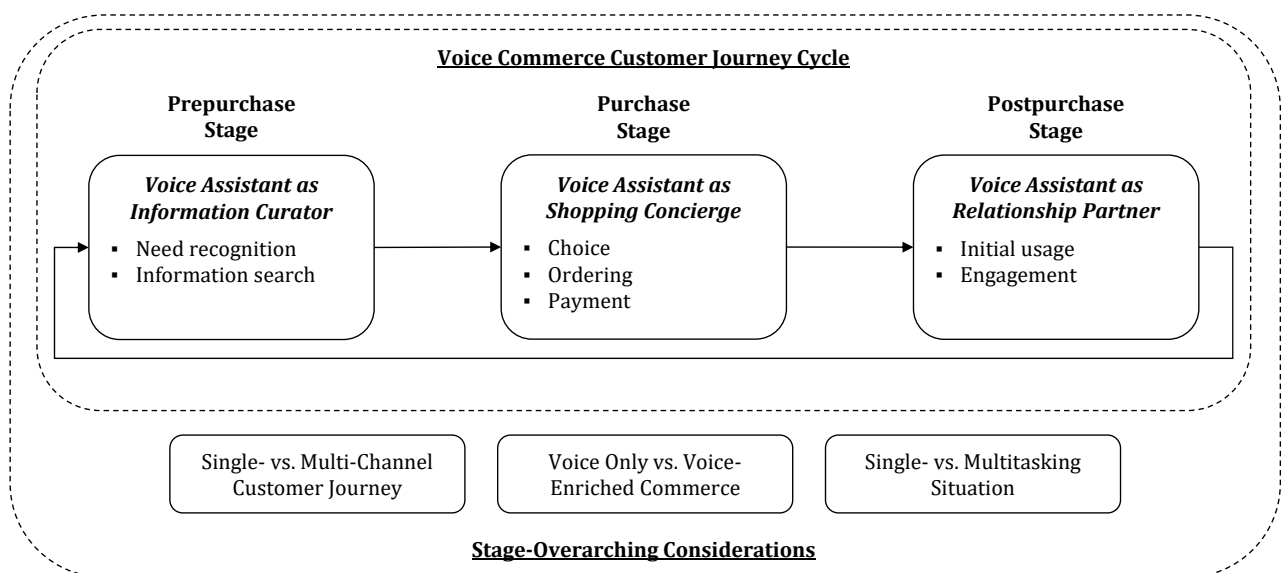

Fig. 1: Voice Commerce Customer Journey

The process begins in the prepurchase stage. It consists of all purchase-relevant customer actions that take place

prior to the actual purchase, which can be categorized according to two steps: need recognition and information

search. The need to purchase a specific type of product can be spurred by internal (e.g., inner perceptions) or external (e.g., vendors' marketing activities) drivers. Consumers can turn to voice assistants to find information, with curated details about different product alternatives. The actual act of buying the product occurs in the purchase stage, which encompasses three major steps: choice, ordering, and payment. Choice is the primary task to fulfill, such that consumers select an option from an evoked set of available alternatives. To order, consumers also must make selections, such as among product delivery options. In the last element of the purchase stage, consumers place their orders by selecting and authorizing payment. After the purchase, consumers enter the postpurchase stage of the customer journey. It comprises their initial usage of the purchased product and their product-related engagement behavior over the course of their continuous usage. The postpurchase stage is critical; at this stage of their journey, consumers reconcile perceived performance with their prior expectations, which ultimately determines their repurchase and cross-buying intentions (Puccinelli *et al.,* 2009).

In the following, we provide an in-depth assessment of the specific features of voice commerce, then pose research questions pertaining to the prepurchase, purchase, and postpurchase stages. We also acknowledge several overarching, stage-independent phenomena related to voice commerce.

3. Research Agenda

3.1. Prepurchase Stage: Voice Assistant as Information Curator versus Manipulator

The humanoid appearance of voice assistants and the verbal communication cues they offer influence consumers in the prepurchase stage. In addition to their positive consequences, negative outcomes may arise, in terms of privacy and perceived manipulation. These likely implications lead to several important research questions, as listed in Table 2.

Area	Research Questions
Prepurchase Stage: Voice Assistant as Information Curator versus Manipulator	
Need Recognition	RQ1.1: How does voice commerce affect **impulsive/unplanned purchases**?
	■ Does deactivating the purchasing feature/shopping function of a voice assistant decrease impulse buying?
	■ What role do price promotions take for impulse buying in voice commerce?
	RQ1.2: Can voice commerce stimulate **new shopping impulses** during information search?
	■ Can voice commerce stimulate cross-selling/up-selling?
	■ How does voice commerce influence switching barriers?
Information Search	RQ1.3: How does voice commerce affect the perceived **value of information**?
	■ What effects do individual search profiles that allow for personalized information selection have?
	■ What role do external quality signals and third-party information (e.g., product reviews) play in voice commerce?
	RQ1.4: How does voice commerce facilitate **information processing**?
	■ Is voice commerce particularly suitable for promoting products that rely on automated information processing (e.g., habitual purchases, search products)?
	■ What role do product comparisons have in voice commerce?
	■ For whom is information processing through voice assistants most suitable?
	RQ1.5: What is the role of the perceived **confidentiality of information search** in voice commerce?
	■ Do consumers perceive voice commerce as a source of sensitive information?
	■ What influences perceptions of the confidentiality of information search in voice commerce?

Tab. 2: Research Questions Related to the Prepurchase Stage

Need recognition. The customer journey starts with the recognition of a need. Compared with traditional e-commerce, voice commerce raises two major differences in need recognition: the likelihood and pace of reacting to internal needs and the adequacy and availability of external purchase stimuli.

Reaction to internal needs. With voice agents, customers can make purchases directly, such that they can react to shopping impulses immediately, without any temporal or cerebral limitations (Klaus and Zaichkowsky, 2021). Customers thus might be more likely to pursue shopping impulses they have "along the way", such

as while cooking, driving, or watching TV. Voice commerce might encourage impulsive buying behavior for two reasons. First, the possibility to act directly on identified needs facilitates impulsive shopping. Second, according to Kleese *et al.* (2015), preference expression modalities affect impulsive buying. Customers are less self-controlled when talking instead of manually expressing a preference, such as by writing or pressing a button. Therefore, they may be more likely to make an impulsive choice when ordering through voice agents.

Although strategies for reducing impulsive shopping have been identified for offline commerce (Inman *et al.*, 2009), most of them (e.g., cash payment, writing a shopping list) are not applicable to voice commerce. Therefore, we need insights into specific strategies for reducing unplanned and impulsive buying in voice commerce (RQ1.1). Perhaps, for example, deactivating the voice-based purchasing feature would be useful for customers who want to reduce their impulsive buying through voice agents (Munz and Moritz, 2019). They still can search for products and even place items in their shopping carts, but to finalize the order, they need to visit the app or online shop. This extra effort, time delay between search and purchase, and combination of different preference expression modalities (i.e., speaking and button-pressing/writing) could reduce impulsive shopping. Considering how impulsive buying can be triggered by different marketing stimuli (Iyer *et al.*, 2020), it may be important to understand the effects of varying price discounts in voice commerce too.

Activation by external stimuli. Voice commerce is a double-edged sword for the external stimulation of customer needs: It increases the accuracy of these external stimuli but limits their availability. Depending on the characteristics of voice agents, such as context awareness and self-learning, they usually can trigger customer needs with high accuracy. Voice agents are good at making customers aware of a need, even before customers realize that need themselves (Mari *et al.,* 2020). However, this high accuracy might lead voice agents to remind customers of a need by (re-)presenting a previously purchased product instead of alternatives, resulting in a limited number of external stimuli (Mari, 2019; Mari *et al.,* 2020) and the risk of lock-in effects, which undermine consumers' variety seeking (Mari *et al.,* 2020). Such patterns may have negative consequences for the introduction and dissemination of new products and brands, which struggle to gain access to the customer's awareness set (Mari *et al.,* 2020).

To match the benefits of other shopping channels, voice commerce needs to find ways to stimulate cross-selling or up-selling (RQ1.2). For example, voice assistants might give recommendations of new products or product cat-egories that reflect customers' previous purchases (e.g., "You just decided to buy…. Other customers buying this product also bought XY"; "Related to your purchase of XY, I would also recommend…"). Additional research might explore how voice commerce influences switching barriers. On the one hand, voice-based interactions could increase lock-in effects, due to the curated nature of the information presented. On the other hand, when voice assistants regularly present alternatives to customers' preferred choices, thereby expanding their awareness set, they may facilitate efforts to overcome switching barriers. Therefore, research might elaborate how new products/brands can ensure that they become part of customers' evoked sets in voice commerce.

Information search. Customers increasingly use voice assistants as a source of information, but little research has addressed their perceived value as information search channels. We predict that voice assistants might function as valuable information curators that help customers make well-informed purchase decisions, or they might appear to manipulate the information. We thus derive potential benefits and drawbacks of voice commerce for consumers' information search, due to its specific characteristics. During the information search stage, customers have three goals: to (1) receive valuable information, (2) reduce the cognitive effort associated with processing the information, and (3) ensure confidentiality in their information search. We address these three objectives separately in our analysis.

Information transmission. Information transmission is the extent to which an information source "provides consumers with resourceful and helpful information" (Lim and Ting, 2012, p. 51). Voice commerce can have both positive and negative effects on customers' perceptions of the value of information, due to its specific characteristics. In particular, the substantial personalization of information provided by voice assistants might enhance its informativeness for consumers. Product suggestions made by voice agents build on consumers' previously expressed requirements, preferences, and purchases (Klaus and Zaichkowsky, 2021), so the information likely is more helpful and suitable for consumers than if they were searching independently (Mari *et al.,* 2020).

Yet information conveyed by voice assistants also might appear less valuable to customers, for three reasons. First, voice commerce, unlike other channels, offers limited capacity to present search attributes (Figure 2), which also limits its information transmission. Some attributes that can be evaluated before purchase in offline commerce, such that they are search attributes (e.g., color of a sweater), become experience attributes that can be assessed only after purchase in voice commerce (Nelson, 1970). In offline settings, vendors have various opportu-

nities to present search attributes and reduce customer prepurchase uncertainty, such as by allowing customers to touch, feel, or smell a product. In online commerce, the presentation of such search qualities is constrained; online vendors cannot give customers opportunities to touch or smell a product, so they suffer greater uncertainty compared with what they experience through offline commerce (Kim and Krishnan, 2015). In voice commerce, the options for presenting search qualities are even more constrained. Without visual input, vendors must rely solely on auditory cues to describe products. Thus, product attributes (e.g., product design) that are search qualities in both offline and online commerce also transform into experience qualities in voice commerce. According to Mari *et al.* (2020, p. 5), customers only accept the limited information transmission in voice commerce because online commerce "has paved the way for voice shopping, bringing consumers to overcome the initial diffidence of buying without directly seeing, touching, or smelling an object."
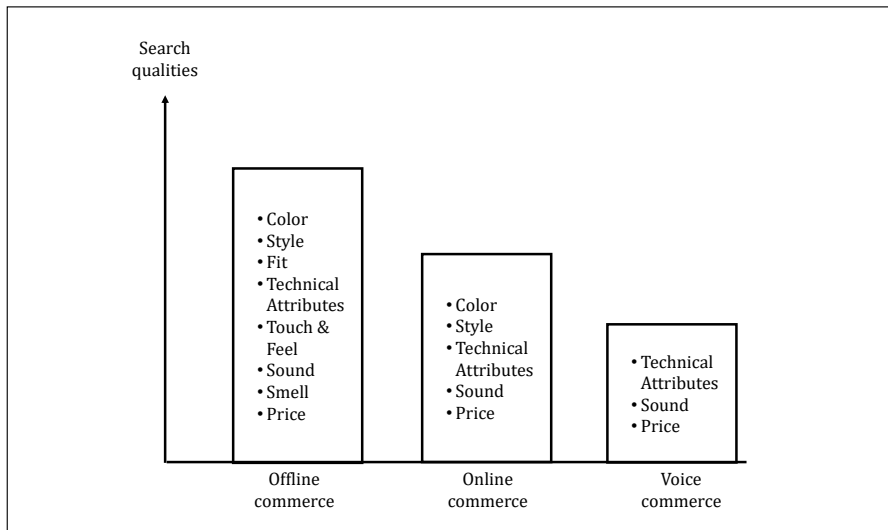

Fig. 2: Extent of Search Qualities in Offline, Online, and Voice Commerce

Second, compared with conventional commerce, voice commerce offers customers only limited information about alternatives and attributes. Typically, only a single item is suggested initially, and customers may receive information about its name, potential variants, and price. The absence of additional information, such as visual cues or product descriptions, can increase customers' perceived uncertainty.

Third, consumers perceive information provision by voice assistants as less transparent, because the determination of alternatives and the underlying algorithm that defines them represent a "black box" to consumers (Mari, 2019; Rzepka *et al.*, 2020). For example, Alexa often recommends an Amazon Choice product in a particular category as a default option; the criteria that leads a product to be categorized as an Amazon Choice are not obvious to consumers though, so they may assume that the choice reflects company rather than consumer interests. As a consequence, they experience substantial uncertainty about whether the presented alternative actually represents the best available option for them (Chernev *et al.*, 2015). Moreover, if consumers perceive a lack of autonomy and control over their information search (Mari *et al.*, 2020; Rzepka *et al.*, 2020), it may have detrimental effects on their attitudes and behaviors.

Continued research should investigate different strategies to enhance the value of information search through voice agents and improve the trade-off between personalization and perceived manipulation (RQ1.3). Customized search profiles could be a promising way to reap the benefits of personalization while providing more search autonomy to consumers. By leveraging their customized search profiles, consumers could influence the information selection in such a way that the voice assistant always includes specific alternatives, attributes, and criteria that the consumer deems important. By offering default options that facilitate socially desirable decisions (e.g., sustainable products), such customized search profiles also could constitute a promising nudging strategy. To enhance the perceived credibility of information, providers should strive to promote transparent information selection and reveal the criteria for the selection of recommended options. In support of such efforts, we need research into the perceived credibility of different selection criteria, both internal (e.g., consumer's purchase history) and external (e.g., favorite choice of consumers buying similar products). External quality signals, such as product reviews or test results, also might improve information transmission and reduce consumers' purchase uncertainty. Because of the lack of search qualities in voice commerce, consumers generally experience substantial

uncertainty prior to purchase, so research should determine if the effectiveness of product reviews might be even greater for voice commerce compared with other forms of commerce.

Reduction of effort. Information sources also vary with regard to the cognitive effort associated with processing the information they provide. Voice commerce seemingly demands different effort, but the amount is unclear. That is, some researchers argue that voice commerce requires less cognitive effort by consumers (e.g., Tassiello *et al.*, 2021; Klaus and Zaichkowsky, 2021), mainly due to the restricted amount of information available, in combination with the high personalization of that information. The opportunity to undertake an information search with a simple command and preselect alternatives, in the form of a default option, can enable a nearly automated buying experience that requires only minor consumer effort (Tassiello *et al.*, 2021). Such information processing is highly suitable for habitual and repeat purchases of low-involvement products that evoke little motivation for consumers to search for or process information (Klaus and Zaichkowsky, 2021).

But other studies take an opposing view and propose that voice commerce impedes information processing (e.g., Munz and Morwitz, 2019). Due to the exclusively auditory presentation of information, information processing may be more difficult in voice commerce, compared with visual information, considering that auditory information is "speaker-paced, ephemeral and described in a sequence of the speaker's choosing" (Munz and Morwitz, 2019, p. 48). In turn, it is more difficult for consumers to compare alternatives and apply decision heuristics during information processing through voice commerce. According to Munz and Morwitz (2019), such choice difficulty may prompt consumers to rely on the assistant's recommendation, or it can lead to a greater likelihood of choice deferral, especially for high-involvement decisions, for which consumers have a strong interest in finding the most suitable alternative.

Future research should identify tactics to help realize the benefits of automated information processing and circumvent the potential threats of manual information processing using auditory information (RQ1.4). To specify scenarios in which automated information processing through voice commerce might be most suitable, research could examine differences across product types. For example, it would be interesting to compare purchase behavior related to search products versus experience products. It seems relevant for voice assistants to guide and support information processing by consumers too. Researchers thus could address the effectiveness of different presentation modes, such as product rankings or guided filtering options. The effectiveness of these instru-

ments might depend on individual consumer characteristics, in that people differ in their ability to memorize, visualize, or process acoustic information (Munz and Morwitz, 2019). We thus need evidence about for whom information processing through voice assistants is most suitable and most effective (Munz and Morwitz, 2019).

Confidentiality. An important concern that consumers face during information search involves confidentiality (Kumar *et al.,* 2016). In a positive sense, voice commerce could represent a valuable source of information about sensitive issues. Consumers often prefer to consult impersonal sources (e.g., websites, robots) rather than interpersonal sources (e.g., friends, company representatives) to gather information about sensitive issues (e.g., finances, health; Holthöwer and van Doorn, 2022). Voice commerce combines the advantages of impersonal and interpersonal sources, because it ensures confidentiality with regard to sensitive issues while also evoking the social presence of interpersonal relationships, so it might be an attractive source of sensitive information.

In a negative sense though, voice commerce can threaten data privacy (Bawack *et al.*, 2021; Kowalczuk, 2018; Tuzovic and Paluch, 2018). Consumers worry that voice assistant providers might collect personal information without their knowledge, build profiles of them, or track their electronic footprints (Kumar *et al.,* 2016). Moreover, their personal data might be at risk of being hacked or leaked to criminals who seek to exploit uses of voice assistants (Kowalczuk 2018). These privacy threats might increase perceptions of vulnerability (Martin *et al.* 2017) and cause consumers to limit their information search through voice commerce.

Future research should identify strategies to realize the benefits and circumvent such confidentiality and privacy threats (RQ1.5). First, voice assistants could be promoted as a source of sensitive information explicitly, which might suggest new applications. Researchers should test whether voice assistants really are perceived as valuable sources of sensitive information, as well as find the circumstances in which an interaction with a voice assistant seems very confidential, such that it alleviates customer embarrassment. A parasocial relationship (Flaswinkel et al., 2022; Whang and Im, 2021), perceived similarity with the voice assistant (Reinkemeier and Gnewuch, 2022), and perceived power (Tassiello *et al.,* 2020) all might be important drivers of consumer trust in these situations. Moreover, voice assistant providers should attend carefully to consumers' data privacy concerns. Prior research identifies two main strategies to cope with data privacy issues: data use transparency and customer control (Martin *et al.,* 2017). Therefore, the providers that market voice assistants should offer substantial transparency about their data collection, use, and storage procedures, as

well as enable consumers to review and control which personal information the voice assistant has. Researchers might examine potential trade-offs between perceived convenience (enabled by data provision) and privacy (ensured by data reservation).

Overall, voice commerce has both beneficial and detrimental effects related to the different activities that consumers perform during the prepurchase stage. Even if voice assistants may provide value through their information curation, they also might be perceived as manipulative and thus as a threat to consumers' independent information search.

3.2. Purchase Stage: Voice Assistant as Shopping Concierge versus Impediment

The purchase stage encompasses three main steps: choice, ordering, and payment. Voice commerce supports nearly

seamless transitions, from choice to ordering to payment, so most research does not differentiate among these steps and collapses them (e.g., Munz and Morwitz, 2019). Arguably, the distinction between choice and order becomes superfluous in voice commerce, which then would raise several challenges that research can address. We take a more fine-grained view on sequential choice-, ordering-, and payment-related issues in voice commerce to assess how, during the purchase process, voice assistants can act as a shopping concierge that supports consumers' choice, ordering, and payment, but also how it might impede these processes. Value for consumers in the purchase stage of the customer journey is a relevant subject for future research. We suggest specific insights and research directions for all three steps in the purchase stage next, as synthesized in Table 3.

Area	Research Questions
Purchase Stage: Voice Assistant as Shopping Concierge versus Impediment	
Choice	RQ2.1: Can **voice assistants** facilitate choice?
	■ Does **voice style** (e.g., artificiality, gender, tone, pace) affect consumer choice for different types of products?
	■ What **informational cues** presented/emphasized by voice assistants (e.g., brand name, product features, price, online reviews) have the greatest impact on consumer choice?
	■ Do voice assistants facilitate choice for purchases of **high-involvement products**?
	RQ2.2: How do consumers exert **control** over voice commerce?
	■ Do **simultaneous activities** occupying other senses affect consumers' control?
	■ Does a **verbal versus touch command** affect consumers' sense of control?
	■ How can **vendors** increase consumers' perceptions of control and transparency?
	RQ2.3: How does voice commerce affect consumers' **self-control**?
	■ Does voice commerce stimulate **indulgent choices**?
	■ Are consumers more or less **price sensitive** when purchasing through voice commerce?
Ordering	RQ2.4: How do **external conditions** affect consumers' ordering behavior?
	■ Do **situational cues** such as buying sensitive products affect consumers' ordering behavior?
	■ Do **environmental cues** such as using voice commerce in private versus public spheres affect consumers' ordering behavior?
	RQ2.5: Does voice commerce lead to or stimulate **fragmented ordering behavior**?
	■ Does voice commerce create **coordination problems** within households?
	■ How can the **negative externalities of fragmented ordering behavior** be avoided?
Payment	RQ2.6: Given payment data sensitivity, do consumers exhibit enhanced **data privacy concerns** in voice commerce relative to e-commerce or offline retail?
	■ Does the **danger of being overheard** affect consumers' data privacy concerns?
	■ Does the **humanoid nature of voice assistants** increase or decrease data privacy concerns, compared with technical interfaces?
	RQ2.7: Which **price-related psychological effects** gain relevance in the payment stage of voice commerce?
	■ How does hearing rather than seeing monetary values affect consumers' **overview of expenses** (similar to different perceptions of cash versus credit card payments)?
	■ Does voice commerce affect consumers' **pain of paying**?
	■ Do consumers tend to **split purchase baskets** into several lower value orders rather than one combined higher value order?
	■ Do higher **shopping cart values** increase consumers' tendency to abandon the purchase, more so than in online or offline commerce?

Tab. 3: Research Questions on Voice Commerce in the Purchase Stage

Choice. When consumers enter the purchase stage, their primary task is to make a *choice* and select an option from an evoked set of available alternatives. In voice

commerce, consumers rely on a limited set of communication cues and senses. Because they exchange verbal cues with the voice assistant, they exclusively process

information through their sense of hearing.[1] In other commerce formats, consumers leverage more senses and communication cues. For example, in e-commerce, consumers process visual, textual, and potentially verbal (e.g., product videos) information, using their sight and hearing. In offline retail, haptic and olfactory cues also might be available, which consumers can process with their senses of touch, smell, or taste.

Fully relying on sending and receiving verbal information has important, mixed implications for consumer choice. On the bright side, voice commerce may make consumer choices more convenient, by facilitating both decision making and choice execution (RQ2.1). First, it simplifies decision making by presenting consumers with a limited, curated, evoked set of alternatives. They can inform the evoked set themselves, through their search and evaluation activities in the prepurchase stage (e.g., adding products to a short list). But even if they rely on voice assistants' recommendations, those suggestions likely are based on the consumers' purchase histories or seller-induced promotions. Second, voice commerce expands choice execution capacities to settings where purchase choices previously might not have been feasible. For example, consumers can make product choices even if they cannot apply senses typically required to make choices, such as sight, while engaged in activities that require that capacity (e.g., while driving a car). Then their choices can be put into effect through verbal commands, which eliminates the need for manual implementation efforts (e.g., clicking on a button on a computer or mobile device while doing household chores). Extant research on voice commerce emphasizes these bright sides, citing the gains in convenience as a major consumer-perceived benefit of purchasing through voice commerce (e.g., Klaus and Zaichkowsky, 2020, 2021; Kraus *et al.,* 2019; Rzepka *et al.,* 2020). Choice also might be affected by the style of the voice, such as its seeming artificiality (Guha *et al.,* 2022), as well as by the availability of particular information cues, such as brand and price information, depending on the consumers' product involvement.

Yet, choice execution and decision making through voice commerce also incur a potential dark side, related to consumers' limited control over voice commerce (RQ2.2). This lack of control evokes consumer skepticism (Rzepka *et al.,* 2020). For example, information presented verbally is more difficult to process than the same information presented in writing, due to the augmented burden it places on working memory (Munz and Morwitz, 2019). Therefore, it is not surprising that consumers thus far have used voice commerce mainly for low-involvement products (Klaus and Zaichkowsky, 2020, 2021; Tassiello *et al.,* 2021). Because voice commerce enables choice execution in parallel, or potentially secondary to, other

activities, it can be challenging for consumers. If the task competes for consumers' attention with other, potentially more primary activities, choice execution might become arduous and error-prone. For example, if consumers devote only limited or interrupted attention to the list of options presented by the voice assistant, they may need to listen to the list of options over and over again. Background noise also easily impedes the quality of this communication channel, such that consumers' verbal commands may be misunderstood by voice assistants and prompt inaccurate choices. In addition, consumers may perceive enhanced choice risks due to their limited control and transparency. Restricting the choice situation to verbal information and forgoing the opportunity to inspect choice options visually means that consumers are deliberately delegating some of their control. In voice commerce, decision making depends on the options presented by the voice assistant, which might be determined by vendors' promotional activities. More so than in an e-commerce setting, which allows consumers to compare product information (e.g., prices) across websites, vendors strongly determine the information being provided in voice commerce and thus influence the attractiveness of choice options.

Finally, some initial studies indicate that voice commerce, compared with other commerce formats, systematically alters consumers' choices (RQ2.3). For example, Paul *et al.* (2021) show that consumers make more indulgent choices, suggesting that they share their perceived responsibility for choices with the voice assistant, which enables them to justify the selection of options that otherwise might evoke perceived guilt. If consumers trust their voice assistant, they also exhibit stronger tendencies to choose an option presented as the default and consider a smaller set of choice options (Mari and Algesheimer, 2021). This pattern may lead to decreased price sensitivity, such that consumers rely on the suggestions of the voice assistant without closely considering alternative options themselves.

Ordering. After consumers have completed the choice step by selecting their preferred product or service, they proceed to the *ordering* step and must provide destination details for the delivery of goods or other information (e.g., invoice address). Furthermore, they may have to choose among different logistics options (e.g., providers, standard vs. express delivery). In the case of services, consumers select among different scopes (e.g., buying an

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1 For conceptual parsimony, we focus on purchases made exclusively through voice commerce. In practice, consumers may use additional devices (e.g., smartphones, tablets) together with their voice assistants to make purchases. We discuss different types of voice-enriched commerce and their implications subsequently.

individual press article vs. subscribing to a service). The orders then get processed by the voice assistant, following a simple command (Mari and Algesheimer, 2021). Ordering through voice commerce promises mental relief, especially for recurring purchase decisions, for which a purchase history is available and the voice assistant can perform an automated match (Mari *et al.*, 2020). Sudden needs for a product in a particular usage setting can be satisfied directly, rather than being forgotten later (e.g., a consumer notices that the stock of dishwasher tabs is getting low and orders more immediately, by calling out to the voice assistant). Yet relatively little information gets communicated in the order stage, such that dialogues are limited, and necessary changes get communicated only in exceptional cases. Thus the ordering process is shortened and accelerated, which consumers likely find convenient. The reliability of the voice recording probably determines whether customers rely on the voice assistant for major adjustments (e.g., changing the shipping address) or prefer to make selections, or at least a final check, on a screen. Privacy concerns and trust again might arise as impediments at this point; consumers might prefer to avoid reciting their address or other private information out loud, especially in public settings (RQ2.4).

Habitual, bundled, regular purchases also could transform into fragmented purchasing behavior if organized by the voice assistant (RQ2.5). This fragmentation could lead to coordination problems in family households and be less sustainable than current purchasing behavior. For example, rather than collecting items on a shopping list and buying them altogether in a weekly purchase, the convenience of instant ordering may decoy consumers into placing quick orders for single items, resulting in multiple deliveries and potentially overlapping orders. Research should investigate the extent to which the coincidence of choice, order, and payment leads to fragmented purchasing behavior, with negative externalities.

Payment. To conclude the purchase stage and place their order, consumers need to select and confirm a *payment* method. They verbally select a payment method, by entering a new payment method or choosing from a list of preset options, then must authorize the payment for the order to proceed. Paying through voice commerce can have positive and negative implications for consumers' perceptions of and attitudes toward payment. Whereas consumers might perceive the payment process as efficient and accelerated, because it does not require them to review payment data again, the hands-free, verbally induced payment confirmation may seem risky to consumers. Feelings of discomfort might occur if privacy appears limited, such as due to the humanoid nature of voice assistants (RQ2.6).

By merging choice, order, and payment, voice commerce might cause consumers to become less price-sensitive (RQ2.7). The automatic checkout eliminates time for reflection on total costs, as is typical for online purchases, which can lead to shopping cart abandonment (Huang *et al.*, 2018; Kukar-Kinney and Close, 2010). In contrast, lower payment salience might result in greater abandonment of shopping carts, if a high value of the basket surprises voice commerce consumers. In addition, unauthorized purchases through voice commerce might occur without protective measures, which could be a challenge, especially for families. Confirming a payment through verbal commands rather than manually swiping a card or typing in payment data might feel transient and less "official." For some consumers, it likely stimulates discomfort; they worry about losing track of their expenses, which can represent a purchase barrier. But some consumers also might enjoy limited bookkeeping opportunities, even if it reduces the pain of paying and leaves them prone to exceed their budgets.

3.3. Postpurchase Stage: Voice Assistant as Relationship Partner versus Intruder

The ability to listen to consumers, understand their verbal utterances, and interact with them in natural language makes voice assistants potentially powerful customer experience partners in the postpurchase stage. As omnipresent devices with low activation thresholds, voice assistants can accompany and support consumers throughout the postpurchase stage, from the initial unboxing, to setting up, to discovering the products' functionalities, to vendor-initiated cycles of increasing engagement with the product and vendor brand. In this ways, voice assistants offer unprecedented opportunities for providers to learn more about and take an active role in customers' postpurchase usage and engagement. These new opportunities may help consumers unlock the full value potential inherent in their products, but consumers also might perceive vendors as intrusive. Therefore, we discuss the opportunities and threats of voice assistants during the postpurchase stage, along with promising avenues for research related to this final stage of the customer journey.

Extant literature on voice assistants tends to focus on their potential applications, benefits, and drawbacks in the prepurchase and purchase phases, with less consideration of their capacities for improving consumers' postpurchase experience. Among some emerging literature on voice assistants in the postpurchase phase, we find evidence of the impact of voice assistants on customer engagement at a general level (e.g., McLean *et al.*, 2021; Moriuchi, 2019). Their applications for (initial) usage phases remain largely overlooked. Table 4 includes these and other promising research avenues for the initial

usage and engagement phases, which we discuss in more detail next.

Area	Research Questions
Postpurchase Stage: Voice Assistant as Relationship Partner versus Intruder	
Initial Usage	RQ3.1: Can voice assistants facilitate **onboarding processes** for new customers?
	▪ Do they support continuous customer interactions after purchase?
	▪ How can voice assistants enable set-up, installation, and discovery of newly purchased products' features?
	▪ Can voice assistants compensate for reduced sensory information?
	RQ3.2: Can voice assistants mitigate **postpurchase dissonance**?
	▪ Do they reinforce confidence in purchase decisions?
	▪ Do they reduce customer doubts and help them cope with negative emotions?
Engagement	RQ3.3: How do voice assistants influence **brand-related engagement**?
	▪ What differences arise between contractual and non-contractual settings?
	▪ What are the effects on interaction intensity?
	RQ3.4: Can voice assistants improve **recovery processes**?
	▪ What role do verbal cues have for complaint handling?
	▪ Which emotions emerge when consumers complain to voice assistants?
	▪ Is it more likely for people to complain to voice assistants?
	RQ3.5: Which **customer insights** can vendors generate from voice assistant interactions?
	▪ Should providers engage in automated data collection during usage?
	▪ What are the key opportunities for proactive customer interactions?
	RQ3.6: How do voice assistants influence **customer loyalty**?
	▪ What is the role of continuous customer engagement?
	▪ Does brand ubiquity influence evoked sets?
	▪ What is the best timing for approaching customers?

Tab. 4: Research Questions on Voice Commerce in the Postpurchase Stage

Initial Usage. Despite the lack of consideration in extant literature, voice assistants offer unique and unprecedented opportunities for vendor firms to accompany consumers along their usage process and adopt an active role. In traditional commerce, vendors usually lose contact with customers once the sale is complete; the customers' consumption and product usage behavior would remain opaque to the vendor firm. Firms' passive roles and lack of insight into customers' usage processes represent particularly acute issues for vendors in indirect distribution channels, such as automobile and consumer electronics manufacturers or insurance providers. But through omnipresent voice assistants with low activation thresholds, firms can obtain instantaneous feedback from customers, send them targeted messages, and interact with them in natural ways.

Even if, as we have noted, the specific characteristics of voice assistants make them particularly well-suited for information search and for ordering low-involvement and repeat-purchase products, they might prove very helpful for navigating setup and initial usage steps for newly acquired, high-involvement products. From cus-

tomers' perspective, voice assistants provide valuable support as they seek to set up, install, and learn the functionalities of newly purchased products, especially if those products are particularly complex or require difficult installation. As a sympathetic ear, voice assistants represent valuable experience partners that lead customers through the setup process and accompany their first usage attempts (RQ3.1). Voice assistants would be particularly helpful if consumers' tactile or visual senses are consumed by other activities, such as when assembling furniture or installing software.

Certain target groups, such as elderly people or people with limited capacities, also may benefit from voice assistants that compensate for their impaired senses or skills. Generally speaking, voice assistants seem likely to gain importance as customer experience partners for consumers of increasingly complex, technology-enabled goods and services. When voice assistants provide human-like feedback, they can reinforce customers' purchase decisions and foster their motivation to try their purchased products; they also might mitigate their frus-

tration or cheer up customers who struggle to install and test newly acquired products (RQ3.2).

In terms of the specific characteristics of voice assistants, provider firms should proactively design and manage onboarding processes that lead targeted customers through the first steps of installing and using new products. Then the feedback they obtain can be used to monitor and improve the customer experience. If many consumers struggle with a particular installation step for example, vendors might encourage partners in the supply chain to simplify the process to increase customer satisfaction.

Engagement. Following the initial postpurchase setup, customers enter a phase of continuous usage of a product or service, characterized by engagement. Brand-related engagement is the "customer's behavioral manifestations that have a brand or firm focus, beyond purchase, resulting from motivational drivers" (van Doorn *et al.,* 2010, p. 254); it drives consumer–brand relationships (Malthouse *et al.*, 2013). Examples of key brand-related engagement behaviors include interactions with brand representatives (e.g., customer support channels), brand-related interactions with other consumers (e.g., word-of-mouth), and the creation of brand-related content (e.g., posting on social media). In the engagement phase, vendors aim to (1) increase interactions with customers, (2) provide support and recovery; (3) generate customer insights as well as (4) create customer loyalty and initiate repeated purchases. Voice assistants have the potential to contribute to all four of these interrelated goals.

With regard to *increasing interactions with customers*, the ubiquity of voice assistants in customers' daily lives makes repeated interactions easier and more likely. This benefit is especially relevant for vendors that do not enter into contractual agreements with customers. Contractual settings (e.g., gym membership, video streaming service) are per se characterized by repeat interactions, but in non-contractual settings, vendors risk losing contact with consumers immediately after the purchase. But voice assistants can accompany customers throughout their entire usage period (RQ3.3).

Interaction through voice-based assistants also might help address problems that arise in the postpurchase phase and allow companies to *provide support and recovery*. Social media tend to make customer complaints and vendors' recovery efforts public and visible to others (e.g., Hogreve *et al.,* 2019; Schaefers and Schamari, 2016), whereas voice assistants could give vendors an option to revert this trend and regain a greater degree of ownership over the recovery process. Personal interactions also might create more efficient and effective

support, because verbal cues can automatically signal the existence of and need to recover a service failure (e.g., level of anger expressed). We posit that vendors may encounter more emotional complaints through voice assistants than through email, because speaking leads consumers to express more emotional attitudes than writing does (Berger *et al.*, 2021). In addition, the complaint barrier may seem lower with voice assistants, because talking generally is perceived as less effortful than writing. Moreover, unlike customer service channels that require waiting for an available service agent, voice assistants are always available (RQ3.4).

Customer complaints, general inquiries, and brand-related interactions through voice assistants give vendors more *customer insights*, including some that are difficult to gather through other channels. When interacting with voice assistants, customers might directly and freely share their product experiences, ideas for new products, or responses to market tests (RQ3.5). However, vendors should leverage this possibility with caution, because surveying customers too often can have negative effects (Dholakia *et al.*, 2010).

By continuously engaging with customers, voice assistants also offer the opportunity to *increase customer loyalty*. Brand familiarity likely increases through repeated interactions, such that the brand remains top-of-mind for customers and maintains a position in their evoked consideration set. Ultimately, the vendor's postpurchase activities aim to *initiate repeat purchases*. But a major challenge arises in terms of finding the right timing to approach customers. Voice assistants can be helpful in this sense, in that they may enable vendors to gain more nuanced understanding of customer needs and wants. Signals detected through voice-based interactions in the engagement phase also might signal situations in which customers are more open to further offers (RQ3.6).

3.4. Stage-Overarching Considerations

In addition to the stage-specific challenges of voice commerce, we identify some overarching research questions, compiled in Table 5.

Single- vs. multichannel customer journey. Thus far, we have focused on customer journeys in which all customer touchpoints involve one vendor and one channel. In reality, such simple customer journeys are rare. Instead, customers "interact with firms through myriad touch points in multiple channels and media, resulting in ... complex customer journeys" (Lemon and Verhoef, 2016, p. 69). Although several multichannel customer journeys have been identified (Herhausen *et al.,* 2019), the potential impact of voice-based channels is unclear.

Area	Research Questions
Stage-Overarching Considerations	
Single- vs. Multi-Channel Customer Journey	RQ4.1: How does voice commerce affect existing multichannel customer journeys?
	■ In which conditions might voice commerce replace or complement existing channels?
	■ Which stages of the customer journey are replaced or enriched by voice commerce?
	■ What effect does using voice as an additional channel have on customer loyalty?
Voice Only vs. Voice-Enriched Commerce	RQ4.2: How do combinations of auditory and visual product information influence customer search behavior?
	■ Does the consumer experience differ between voice-only vs. voice-enriched commerce?
	■ Can voice-enriched commerce minimize the perceived disadvantages of voice commerce (e.g., insufficient product information, difficult comparison)?
Single- vs. Multitasking Situation	RQ4.3: How does multitasking affect customers' cognitive and affective responses to voice commerce?
	■ Does multitasking determine the use of specific product attributes or the number of product attributes considered in product evaluations through voice commerce?
	■ Do emotional responses to voice assistants vary between single and multitasking situations?
	RQ4.4: How does voice commerce differ across various multitasking situations?
	■ Does consumer adoption of voice commerce vary in multitasking situations, depending on task distraction and task relevance?
	■ Can voice commerce overwhelm consumers in certain multitasking situations, due to the level of task-induced stress?

Tab. 5: Research Questions on Stage-Overarching Considerations in Voice Commerce

As voice commerce becomes more common, we need research insights into whether customers use voice channels to substitute for some other, previously used channels, or if it becomes an added channel in an expanded customer journey (RQ 4.1). According to Verhoef *et al.* (2007), "research shopping"—that is, researching in one channel (e.g., online) and purchasing in another (e.g., offline)—is a prevalent customer behavior. Two dominant forms of research shopping are showrooming and webrooming. Showrooming describes a customer journey in which the consumer searches offline and buys online; webrooming is the opposite. As a complement, "voice-rooming" could emerge as a new form of research shopping, in which voice commerce *replaces an existing channel* for product search (i.e., online, offline, or app). The customer would make use of the advantages of voice search, then switch channels for the actual purchase (e.g., to increase the transparency of the transaction details). Alternatively, voice commerce could be *added as an extra channel* to existing journeys. For example, customers might showroom by researching a product offline (e.g., IKEA store), then purchasing it online (e.g., IKEA webshop), and then call on a voice assistant in the postpurchase phase (e.g., to get suggestions for how to assemble the purchased furniture).

Voice only vs. voice-enriched commerce. We have considered voice commerce customer journeys that rely solely on auditory presentations of information. But some devices provide visual information as well, such as smartphones and smart speakers with integrated displays (e.g., Amazon's Echo Show). With regard to the specific advantages and disadvantages of voice commerce, relative to other forms of commerce, as we have presented thus far, we also posit that a combined device might allow retailers to address some of the disadvantages. For example, the number of available search attributes would increase if consumers could see the color and style of a product on a screen. More alternatives also could be presented, because the screen allows consumers to process the presented information more readily. The benefits of reduced search effort and personalization likely remain the same with these combined devices though, so voice-enriched commerce might be a promising alternative to voice-only commerce. Research should investigate how the combination of auditory and visual information influences consumers' search behavior (RQ 4.2).

Single- vs. multitasking situations. Voice commerce often involves simultaneous executions of peripheral tasks, such as driving, walking, watching TV, or cooking. The flexibility and convenience in those multitasking situations has been highlighted as a major advantage of voice commerce (Munz and Morwitz, 2019). Yet multitasking also poses inherent challenges for consumers, because it increases their cognitive load and limits their attention (Hoffmann *et al.*, 2013). This limited attention also might alter the customer journey in voice commerce, because multitasking affects both cognitive and affective customer responses (Jeong and Hwang, 2016). With regard to cog-

nitive responses, prior research indicates that multitasking encourages the use of specific product attributes, such as price, and determines the number of product attributes considered in product evaluations (Rahinel and Ahluwalia, 2015). Consumers who experience high cognitive loads tend to focus on fewer and more salient product attributes, so we expect distinct evaluations of product alternatives within voice commerce for single-versus multitasking situations. With regard to affective responses, greater cognitive loads decrease the intensity of emotional responses (Kron *et al.*, 2010). It would be interesting to determine if relational bonds with voice assistants are more likely to emerge in single- vs. multitasking situations (RQ 4.3).

The effectiveness of voice commerce also might depend on the particular multitasking situation, characterized by the level of task distraction and task relevance. First, peripheral tasks prompt different levels of task distraction from the focal task. For example, consumers' attention to voice commerce and perceived level of task-induced stress might differ if they are simultaneously performing a task with high cognitive load (e.g., driving their car) rather than one with a low cognitive load (e.g., listening to music). Second, multitasking situations vary in the extent to which the tasks aim for related or similar goals (Jeong and Hwang, 2016). In voice commerce, consumers can perform a peripheral task related to the focal task of their shopping (e.g., voice shopping for ingredients while cooking) or one that is unrelated and pursue a different goal (e.g., voice shopping for groceries while driving). It will be important to differentiate these multitasking situations in voice commerce and examine potential differences in the customer journey (RQ 4.4).

4. Conclusion

Considering the omnipresence of voice assistants in consumers' lives (Bawack *et al.*, 2021), voice commerce is gaining traction as an e-commerce format. Its unique capabilities (e.g., hearing, understanding, interacting through natural language) enable consumers to perform shopping tasks without using their tactile senses. Voice commerce has the potential to change how consumers and vendor firms interact, engage, and relate (Dellaert *et al.*, 2020; Mari and Algesheimer, 2021; Whang and Im, 2021). In this nascent research field, we put forth a customer journey–based conceptual framework that delineates how voice assistants can evoke both bright and dark side effects for consumers, throughout all stages of the customer journey. In the prepurchase stage, they can act as information curators or manipulators; in the purchase stage, they might function as shopping concierges or impediments; and in the postpurchase and usage stage, voice assistants can become trusted experience

partners or hostile intruders in consumers' lives. We identify timely research questions for each customer journey stage and discuss several stage-overarching considerations. With this research agenda, we hope to spark additional academic research on the intriguing phenomenon of voice commerce and its relevant managerial and theoretical implications.

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