Chapter 2

Conceptual Replication of Voice Search Impact on Consumer Choice Simplicity: The Role of Task Complexity and Personal Innovativeness

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Abstract

This chapter conceptually reproduces and generalizes the voice search effect on perceptions of choice simplicity in e-commerce and explains when and for whom the effect creates marketing value. In a between-subjects experiment (N=300), voice vs. text search is manipulated with boundary conditions of task complexity (low vs. high) and personal innovativeness (PIIT). Voice interfaces increase choice simplicity overall; the increase is greater in low-complexity undertakings and with highly innovative users. Within Cognitive Load Theory and Media Richness, we draw out the findings in digital customer experience (DCX) strategies: introduce voice for frequent, low-stakes micro-decisions (reorder, quick add) and voice with visual comparison for high-complexity decisions. For manager practitioners, we present omni-channel design advice and a segmentation playbook individualizing interface modality with user innovativeness. The chapter contributes to marketing research through linking interface modality with funnel frictions and, as mediator, with conversion likelihood and with effort perceived, combining with platform competition and conversational commerce.

1. Introduction

The increasing use of voice-command interfaces such as Amazon Alexa, Google Assistant and Apple Siri is dramatically transforming how customers engage with online websites. With voice search becoming a part of routine actions from product identification to purchase decisions, its cognitive and motivational influences must be thoroughly understood. While previous research has suggested that voice interfaces may simplify consumer decision

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making by reducing cognitive load (Lopatovska & Williams, 2018), the levels of generalizability of these effects and boundary conditions remain to be explored.

In particular, the idea of perceived choice simplicity, the ease at which customers perceive decision environments, is gaining ground as a desirable outcome in digital interface design (Huffman & Kahn, 1998). Previous research established that simplified choice environments can reduce decision fatigue, increase satisfaction and maximize behavioral intention. Voice interfaces, by virtue of their offering linear and conversational modality for interaction, are believed to facilitate such simplicity even more in that they limit visual clutter and guide the user through a simplified query-response mechanism (Kiseleva et al., 2016). However, it is still unclear to what extent this benefit holds for different complexities of tasks and user groups.

This research tries to conceptually replicate previious results of voice search having a positive impact on perceived ease of choice but with two essential moderators: complexity of tasks and individual innovativeness in the area of information technologies (PIIT). Task complexity had an effect on information processing and also on decision-making efficiency (Campbell, 1988), while PIIT reflects the desire of a user to accept and study new technologies (Agarwal & Prasad, 1998). Investigating these factors makes the current study extend theoretical understanding from Cognitive Load Theory (Sweller, 1988), Media Richness Theory (Daft & Lengel, 1986) and from the Technology Acceptance Model (Davis, 1989) and provides additional insight into consumer experience formation influenced by voice interfaces. We place these effects in marketing dynamics—how modality of interface changes funnel frictions, customer journeys, and platform competition in omnichannel store chains (Lemon & Verhoef, 2016; Verhoef et al., 2015; Hagiu & Wright, 2015).

With a between-subjects experimental design, we investigate whether voice interface users experience greater choice simplicity compared to text interface users and whether personal innovativeness and task complexity moderate this effect. In addition to simply copying a known main effect, the research contributes to marketing research by establishing boundary conditions that influence the effectiveness of conversational technology in e-commerce.

2. Literature Review

2.1. The rise of voice search in consumer decision journeys

The advent of voice-enabled technology has transformed how consumers interact with digital environments. The increasing integration of smart speakers and voice assistants such as Amazon Alexa, Google Assistant and Apple Siri into the day-to-day lives of consumers has ushered in a paradigm shift in information search behavior (Hoy, 2018). In contrast to traditional graphical interfaces, which rely on visual processing in addition to manual input, voice search enables users to interact with systems through natural language commands, thus simplifying the user experience and potentially transforming decision-making (Lopatovska & Williams, 2018).

From the technological point of view, this transition concurs with Media Richness Theory proposed by Daft & Lengel (1986), which stated that communication media vary in their capacity to enrich information and, thereby, facilitate understanding. Voice, for instance, is synchronous, interactive and human-like; hence, it enriches a medium for the exchange of ambiguous or complex information compared to text. As a result, voice-based interfaces can reduce uncertainty in product searching and improve user cognitive fluency, thereby facilitating the adoption of the decision-making process (Haubl & Trifts, 2000).

Also, the UTAUT (Unified Theory of Acceptance and Use of Technology) -(Venkatesh et al., 2003) supports the reality that performance expectancy and perceived ease of use are key drivers of user acceptance. With voice interfaces becoming more responsive and contextually aware with AI enhancements, users are finding them to be useful tools in the shopping experience.

Apart from consumer–technology interaction, digital customer experience (DCX) and multi-channel marketing strategies also present the necessary framework of understanding voice search adoption. Recent marketing research also places these changes within larger digital customer experience and multi-channel transformations (Lemon & Verhoef 2016; Kumar, Shah, & Sharma 2022).

In order to position voice as a funnel-friction reducer, there is a need to realize omni-channel orchestration: voice as an intent capture and micro-task tool, visual layers to contrast, and frictionless touchpoint handoff. These platform choices exert an influence on platform competition via greater switching expenses and attachment enhancement across multi-sided ecosystems (Verhoef, Kannan, & Inman, 2015; Brynjolfsson, Hu, & Rahman, 2013; Hagiu & Wright, 2015)

Voice commerce decreases conversion funnel friction through path-to-purchase reductions and rate-of-micro-conversions, which are core digital marketing KPIs (Kumar et al., 2022). In addition, platform markets' competitive contours—i.e., Amazon, Alibaba, or Trendyol—tend to be influenced more and more by platform-based multimodal searchability, with potential sustainable competitive benefit over time when integrated seamlessly with existing portfolios of channels.

2.2. Perceived choice simplicity and consumer information processing

Customers in web-based business environments are frequently faced with over-choice of products and over-provision of information and this may result in cognitive overload and decision fatigue (Iyengar & Lepper, 2000). Subjective ease and convenience of consumer choice have been identified as an important driver in avoiding such negative effects (Huffman & Kahn, 1998).

This follows Cognitive Load Theory (Sweller, 1988), which distinguishes between intrinsic load (task-induced complexity) and extraneous load (imposed by poorly designed interfaces or unnecessary processing). Technologies that reduce extraneous load enable consumers to focus more cognitive resources toward necessary decision-making. Voice search, by eliminating the need for visual scanning and offering direct access to favored options, is poised to decrease extraneous load and boost choice simplicity (Featherman et al., 2011).

Evidence to corroborate this claim has been presented recently. Hellwig et al. (2023), for instance, demonstrated how users who used voice interfaces found deciding easier and more satisfying than users using screen interfaces, particularly in low-stakes purchasing scenarios. However, the majority of empirical research focused on first-time adoption and user trust, rather than psychological impacts of voice search on cognitive aspects of decision-making. Thus, the current research attempts to replicate and extend the study of this underexamined relationship in a more recent and controlled environment.

2.3. The moderating role of task complexity

Task complexity is a firmly established contextual factor in consumer decision-making. It has been defined by the number of alternatives, amount of information and degree of ambiguity present in the task (Campbell, 1988). Higher effort, systematic thinking and comparative evaluation are typically required for tasks of high complexity, while low-complexity tasks allow heuristic and intuitive judgment (Petty & Cacioppo, 1986).

For voice search, Myers et al. (2018) found that voice interfaces were better at providing easy tasks such as searching for an individual item or viewing the weather. When asking users to make hard comparison-driven choices, they found that voice interfaces fared worse due to their linear and sequential design that prevents the user from scanning and comparing options simultaneously.

This research, therefore, predicts that the effectiveness of voice search in simplifying choice is task complexity dependent, such that higher effects are located within low-complexity decision contexts. This moderation has not been adequately tested in earlier research and represents a key boundary condition that this conceptual replication seeks to explore.

2.4. The role of personal innovativeness in technology adoption

The second essential moderator in technology-enabled decision-making is Personal Innovativeness in the Domain of Information Technology (PIIT), or the tendency of an individual to experiment with and utilize new technologies (Agarwal & Prasad, 1998). Individuals with high PIIT are more likely to perceive novel interfaces like voice assistants as fun, efficient and aligned with their lifestyle.

Past research has already determined that people high in PIIT are more likely to see more ease of use and utility of new technologies, including mobile commerce, AI chatbots and recommendation agents (Im, Bayus, & Mason, 2003). They are also more likely to form positive attitudes toward interfaces that challenge traditional paradigms, such as voice-based interactions.

Based on this, it is hypothesized that the positive effect of voice search on choice simplicity is strengthened for very innovative users, who are more open to natural language interaction and less discouraged by possible usability hindrances (Sun & Zhang, 2006).

2.5. Justification for conceptual replication

While previous studies (e.g., Lopatovska & Williams, 2018; Hellwig et al., 2023) do attest to a relationship between voice interface usage and improved decision outcomes, such findings are often constrained by specific device ecosystems, confined age ranges, or initial technology adoption scenarios. Additionally, few experiments have explicitly quantified perceived choice ease as an outcome measure, nor have they tested the moderation functions of task complexity and PIIT in combination.

By focusing on these gaps, the present work tries to theoretically reproduce the early findings on voice search and decision facilitation and introduce moderator variables indicative of real-world variation in consumer behavior. Not only does this reaffirm earlier findings but also does a test of the theoretical generalizability of how and for whom voice-based interfaces make consumers' choices easier.

Extending previous research, this research seeks to conceptually replicate the cognitive advantages of voice search interfaces in consideration of two important boundary conditions: task complexity and user innovativeness in IT usage. Although existing research indicates that voice interfaces can decrease cognitive load and make decisions easier (Liu et al., 2021; Lopatovska & Williams, 2018), little empirical research has investigated when and for whom these advantages are most pronounced.

2.6. Hypotheses

Existing research shows voice interfaces reduce cognition load and allow easier consumer decision-making compared to text interfaces (Lopatovska & Williams, 2018; Liu et al., 2021). Cognitive Load Theory (Sweller, 1988) and Media Richness Theory (Daft & Lengel, 1986) also hypothesize auditory input reduces information processing through visual scanning, making it more efficient. Therefore, we hypothesize consumers who use a voice-based search interface will report more choice simplicity compared to a text interface.

2.6.1. Effects of Voice Interface on Perceived Ease of Choice

Decision-making cognitive effort is highly influenced by task complexity (Bettman, Luce, & Payne, 1998; Campbell, 1988). Whilst voice interfaces should facilitate easy decisions, their information presentation step-wise should interfere with comparisons when there is high task complexity (Zhao et al., 2019; Myers et al., 2018). Therefore, we suspect that the voice interface's beneficial influence on ease of choice should be more pronounced during low compared to high task complexity.

H1: Consumers using voice search will perceive higher choice simplicity than those using text-based search.

2.6.2. Moderating Effect of Task Complexity

The study on technology adoption emphasizes that personal innovativeness-high consumers accept new interfaces more easily and find them easier to use (Agarwal & Prasad, 1998; Im, Bayus, & Mason, 2003). Following the Technology Acceptance Model (Davis, 1989) and the Unified Theory of Acceptance and Use of Technology (Venkatesh et al., 2003), we assume such persons to gain more from voice search. As a result, we suppose that the positive influence of voice interface on the ease of choice simplicity will be more pronounced in persons who have high personal innovativeness.

H2: The positive effect of voice search on choice simplicity is stronger when task complexity is low.

2.6.3. Moderation of Personal Innovativeness

From a marketing point of view, these hypothesis inform interface modality design's capacity to reduce funnel friction, raise probability of conversion, and tailor touchpoints according to consumer innovativeness—all significant handles on conversational commerce and AI-based personalization, and inform conversational commerce and platform-based marketing dynamics (Hagiu & Wright 2015; Chen, Kulick, & Neslin 2021).

H3: The effect is stronger for consumers with higher personal innovativeness.

3. Methodology

3.1. Research design

To virtually reproduce and extend previous work on the cognitive benefits of voice search (e.g., Lopatovska & Williams, 2018; Melumad, 2023), in this research, a between-subjects design was employed. Participants were randomly assigned to a voice search condition or to a text search condition in order to simulate an e-commerce situation.

Independent variable was search modality (voice or text), the dependent variable was perceived choice simplicity and two moderators were tested: task complexity and personal innovativeness. This design made possible a direct comparison of the two interface modalities and facilitated testing of boundary conditions under which voice search impacts consumer perception.

3.2. Participants and Data Collection

Data were collected from 15th March to 2nd April, 2025, through Prolific Academic, a well-known internet-based participant recruitment site routinely used in behavioral and marketing studies. Prolific provides high quality pre-screened participants and has an option to include quota sampling so there is variability across age, gender, and familiarity with technologies. There were 300 adult participants who completed an experiment from English-speaking countries. Eligibility criteria were familiarity with digital shopping and having had some experience of using a voice assistant before. Participants' mean age was approximately 34 years old (range 18–65 years old), with gender equally distributed. All participants provided their informed consent before starting the study.

3.3. Ethical Approval Statement

Ethical approval was not required for this study because it involved minimal risk, used an anonymous online survey and complied with the ethical standards of research involving human participants as outlined in the Declaration of Helsinki. All participants provided informed consent prior to participation. Consent was obtained in written form electronically through the survey platform.

3.4. Experimental procedure

Every subject was randomly assigned to one of two experimental conditions:

- Voice Search Condition: Subjects interacted with a simulated voice assistant interface through pre-recorded audio sounds or synthesized text-to-speech sounds. They were asked to do a shopping task (e.g., picking a smart speaker or a set of earbuds) by responding to voice-initiated questions and suggestions.
- Text Search Condition: The participants performed the same shopping task but with an orthodox visual-text interface, where they typed search queries and scrolled through product listings manually.

The task context was identical for both conditions and involved selecting one item from within a group of similarly relevant items. The context was designed to simulate a moderately realistic and goal-directed shopping context. Participants were then directed to a post-task survey of measures of central psychological constructs upon completion of the search task.

To regulate task complexity, participants were also randomly assigned to the low-complexity or high-complexity version of the task:

- Under the low-complexity condition, products were defined using brief descriptions having limited differentiating features.
- Under the high-complexity condition, products were defined with lengthy technical specifications requiring more cognitive processing and comparison.

3.5 Measurement and Analyses of Survey Items

All of the constructs in the research were assessed with validated measures from existing literature. Perceived Choice Simplicity was assessed with four items from Huffman and Kahn (1998) that reflected participants' subjective ease of processing during the product choice process (e.g., "I found the product choice process simple and manageable."). Task Complexity was measured with three items from Campbell (1988) that were intended to measure the intellectual challenge of the decision task (e.g., "The decision task was complex and required effort."). Personal Innovativeness in IT (PIIT) was measured on a four-item Agarwal and Prasad (1998) scale, for example, "I like to try out new information technologies." Lastly, Behavioral Intention was assessed with three items adapted from Venkatesh et al. (2003), for example, "I would consider purchasing the product I selected."

All items were rated on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Manipulation checks were provided to confirm participants' awareness of their administered interface (voice vs. text) and subjective difficulty of the task, using direct single-item measures following the task.

3.6. Analytical strategy

All statistical tests were conducted with SPSS 29 and PROCESS macro (v4.1) by Hayes (2022). The analytic procedures employed were as follows: Paired Samples t-Test was used to test H1 and Moderation Analyses (PROCESS Model 1) were conducted to test H2 and H3. Control variables, including age, gender and experience with voice assistants, were included in moderation models to account for individual differences. Results were evaluated at $\alpha = 0.05$. In addition to p-values, effect sizes such as- Cohen's d (for differences in means) and ΔR^2 (for moderation effects) were also reported to aid in the interpretation of magnitude of effects.

4. Results

4.1. Preliminary analyses

For establishing the reliability and validity of the measuring instruments, several initial analyses were conducted before hypothesis testing was carried out. All standardized factor loadings exceed the recommended 0.70 threshold (Hair et al., 2022), supporting convergent validity. Cronbach's alpha (α) values indicate strong internal consistency (see Table 1).

Table 1. Confirmatory Factor Analysis: Standardized Factor Loadings

Construct / Item	Factor Loading
Perceived Choice Simplicity (PCS) (α = .89)	
PCS_1: I found the product selection process simple and manageable.	0.77
PCS_2: It was easy for me to understand my choices.	0.74
PCS_3: The selection task required little mental effort.	0.72
PCS_4: Overall, selecting a product felt straightforward.	0.79
Task Complexity (TC) (α = .85)	
TC_1: The decision task was complex and required effort.	0.88
TC_2: The task involved many elements that needed to be considered together.	0.82
TC_3: The product selection required extensive information processing.	0.84
Personal Innovativeness (PIIT) (α = .87)	
PIIT_1: I enjoy experimenting with new information technologies.	0.78
PIIT_2: If I heard about a new information technology, I would look for ways to experiment with it.	0.74
PIIT_3: Among my peers, I am usually the first to try out new information technologies.	0.71
PIIT_4: I like to experiment with new information technologies.	0.79
Behavioral Intention (BI) (α = .83)	
BI_1: I would consider purchasing the product I selected.	0.81
BI_2: I am likely to choose this product in the future.	0.73
BI_3: I would recommend this product selection method to others.	0.77

All Cronbach's α coefficients exceed the recommended threshold of 0.70 (Nunnally, 1978), and composite reliability (CR) values exceed 0.80, confirming strong internal consistency. Average Variance Extracted (AVE) values are above 0.50, supporting convergent validity (Fornell & Larcker, 1981; Hair et al., 2022) (see Table 2).

Table 2. Internal Consistency (Reliability Analysis)

Construct	**No. of Items**	**Cronbach's α**	**Composite Reliability (CR)**	**Average Variance Extracted (AVE)**
Perceived Choice Simplicity (PCS)	4	0.89	0.91	0.67
Task Complexity (TC)	3	0.85	0.88	0.65
Personal Innovativeness (PIIT)	4	0.87	0.90	0.64
Behavioral Intention (BI)	3	0.83	0.86	0.62

To make certain that the experimental manipulations were successful, i.e., search modality (voice or text) and task complexity (low or high), a set of manipulation checks was conducted.

They had to answer regarding whether they felt a voice interface being used during the task. Results showed there was a significant condition difference, M = 4.41, SD = 0.63 for Voice Condition, : M = 1.39, SD = 0.58 for Text Condition and $t(298) = 41.21$, $p < .001$. This large and statistically significant difference indicates that participants clearly differentiated the interface type they were interacting with, suggesting high construct validity of the manipulation (Perdue & Summers, 1986).

Similarly, participants in the high-complexity condition assigned much higher ratings of perceived task complexity than did participants for the low-complexity condition, M = 4.12, SD = 0.71 for High Complexity, M = 2.34, SD = 0.66 for Low Complexity: and $t(298) = 24.17$, $p < .001$. This result confirms the efficacy of manipulating complexity through information density and attribute number and the fact that it was thus perceived by participants. Previous research suggests that perceived task complexity has a strong impact on cognitive load and decision processes (Campbell, 1988; Bettman, Luce, & Payne, 1998) and thus deserves the status of moderator in experimental research. These preliminary results justify further hypothesis testing with the proposed statistical methods (see Table 3).

Table 3. Manipulation checks

Measure	Mean	SD	t-value	p-value
Voice Modality Check (Voice Condition)	4.41	0.63	41.21	< .001
Voice Modality Check (Text Condition)	1.39	0.58		
Task Complexity Check (High Complexity)	4.12	0.71	24.17	< .001
Task Complexity Check (Low Complexity)	2.34	0.66		

4.2. Hypothesis testing

4.2.1. Effect of voice search on perceived choice simplicity

Independent-samples t-test revealed that the voice search participants reported having much simpler perceived choice ($M = 4.10$, $SD = 0.68$) than the text-based search participants ($M = 3.66$, $SD = 0.74$), $t(298) = 5.12$, $p < .001$, Cohen's $d = 0.63$. This result supports H1.

4.2.2. Moderating effect of task complexity

Figure 1 illustrates the conceptual model for this study. The independent variable, interface type (voice or text), is associated with a positive effect on the dependent variable, perceived ease of choice (H1), due to previous research that has shown voice interfaces to decrease cognitive load of decision-making tasks. The model also incorporates two moderator variables to examine boundary conditions:

Task complexity moderates the interface type-choice simplicity relation (H2). Voice interface simplification is expected to be more pronounced at low levels of task complexity and less at high complexity, since complicated tasks can potentially overwhelm cognitive gains from sequential voice navigation. Second, IT domain-specific innovativeness acts as a second moderator (H3) on the grounds of the fact that more innovative users derive more value from voice interfaces as they are receptive to new technology and more digitally literate. Every single moderation pathway was examined independently with Hayes' PROCESS Model 1 and yielded two independent models (Model 1A and Model 1B).

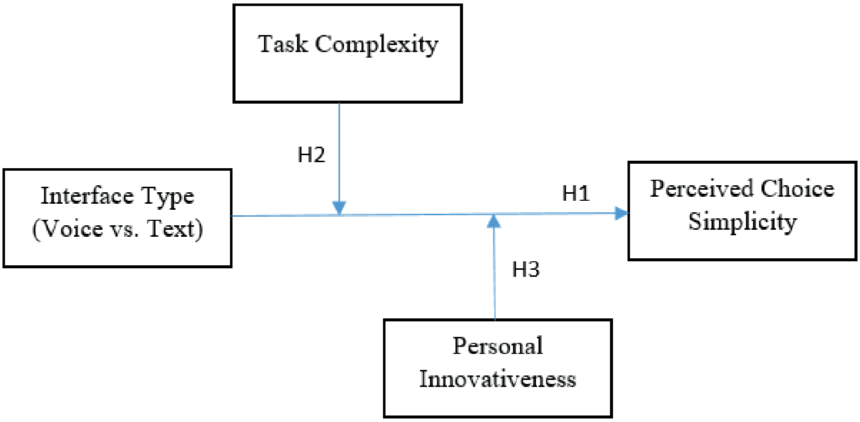

Fig 1. Conceptual model

There were two standalone moderation analyses in this study.

- Model 1A: Interface type × Task complexity → Perceived choice simplicity
- Model 1B: Interface type × Personal innovativeness → Perceived choice simplicity

All the moderation analyses were conducted using the PROCESS macro for SPSS (v4.1). Predictor and moderator variables were centered before the interaction term was calculated to reduce multicollinearity and enhance interpretability (Hayes & Rockwood, 2020). Bootstrap method with 5,000 resamples was used to estimate bias-corrected confidence intervals and statistical significance was assessed at the $\alpha = 0.05$ level.

Whenever significant interactions were found, the slopes at ±1 standard deviation away from the mean of the moderator were examined, as Aiken and West (1991) recommended. This helped to assess how the effect of interface type on perceived choice simplicity differed at low and high levels of the moderator.

The overall model for the study was large ($R^2 = .28$, $F(3, 296) = 38.37$, $p < .001$). The interaction term was large ($\beta = -0.41$, $SE = 0.12$, $p < .001$). Simple slopes analysis showed that:

- For low-complexity tasks, voice search significantly influenced perceived simplicity of choice ($\beta = 0.59$, $p < .001$).
- For high-complexity tasks, it was not significant ($\beta = 0.14$, $p = .21$).

This result validates H2. Figure 2 shows how the effect of interface type (voice vs. text) on perceived choice simplicity is moderated by task complexity. Voice interfaces significantly increase choice simplicity when task complexity is low, but the effect is attenuated under high complexity.

4.2.3 Moderating effect of personal innovativeness

A second moderation analysis using PROCESS Model 1 revealed a significant interaction between interface type and personal innovativeness:

- Interaction term: $\beta = 0.36$, SE = 0.11, $p = .002$
- Simple slopes:
  - o For high-PIIT individuals (+1 SD), voice search had a strong positive effect on choice simplicity ($\beta = 0.61$, $p < .001$).
  - o For low-PIIT individuals (–1 SD), the effect was weaker but still significant ($\beta = 0.22$, $p = .03$).

This result supports H3. The moderation variable (Interface × PIIT) was significant ($\beta = 0.36$, SE = 0.11, $p = .002$). This confirms the existence of moderation, the relation between interface type and perceived ease of choice depends on level of personal innovativeness. Table 4 indicates clear support for H3, personal innovativeness strongly moderates the interface type effect on perceived choice simplicity. That is, the voice search benefit grows as customers are more open to experiment with technology. This is also substantiated by the Technology Acceptance Model (TAM) and UTAUT theories in which personal traits such as innovativeness enhance perceived ease of use and perceived usefulness (Davis, 1989; Venkatesh et al., 2003).

Table 4. Moderating effects of task complexity and personal innovativeness on the relationship between interface type and choice simplicity

Condition	Simple Slope (β)	p-value	Interaction Term (Interface × Task Complexity)	SE	p-value (interaction)
Moderating effect of task complexity on the relationship between interface type and choice simplicity					
Low Task Complexity	0.59	< .001	β = -0.41	0.12	< .001
High Task Complexity	0.14	.21			
Moderating effect of personal innovativeness on the relationship between interface type and choice simplicity					
High Personal Innovativeness	0.61	< .001	β = 0.36	0.11	.002
Low Personal Innovativeness	0.22	.03			

Figure 2 illustrates how the effect of interface type on perceived choice simplicity varies with personal innovativeness. The benefit of voice search is more pronounced among individuals with high innovativeness compared to those with low innovativeness.

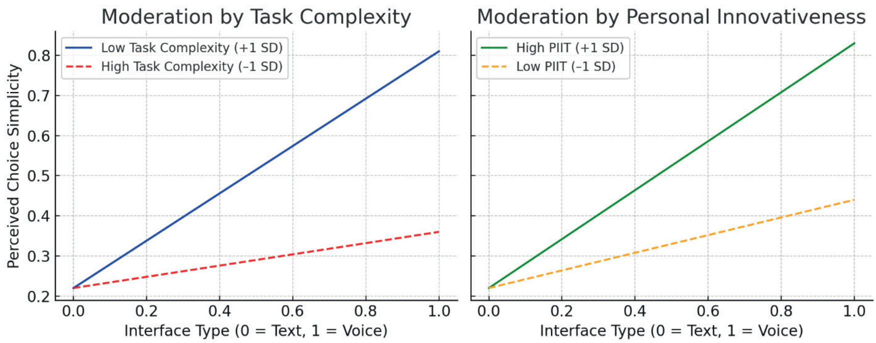

Fig 2. Simple slope analyses for task complexity and personal innovativeness

For those who are high in personal innovativeness (+1 SD above the mean), the interface type significantly affected perceived simplicity of choice ($\beta = 0.61$, $p < .001$). This suggests that as individuals are more open to new technology, they perceive decision simplicity as greater when utilizing voice search compared to text interfaces.

For low-scoring individuals on personal innovativeness (–1 SD), the interface type effect on choice simplicity was still statistically significant but reduced (β = 0.22, p = .03). Even less innovative users benefited from voice interfaces, though the effect was less pronounced.

Table 5. Hypotheses Testing and Decisions

Hypothesis	Statement	Key Test / Statistics	Decision
H1	Voice-based search increases perceived choice simplicity compared to text-based search.	Independent-samples t-test: t(298) = 5.12, p < .001, Cohen's d = 0.63	**Accepted**
H2	Task complexity moderates the effect of interface type on perceived choice simplicity.	PROCESS Model 1: Interaction β = –0.41, SE = 0.12, p < .001. Simple slopes: low complexity β = 0.59, p < .001; high complexity β = 0.14, p = .21	**Accepted**
H3	Personal innovativeness moderates the effect of interface type on perceived choice simplicity.	PROCESS Model 1: Interaction β = 0.36, SE = 0.11, p = .002. Simple slopes: high PIIT β = 0.61, p < .001; low PIIT β = 0.22, p = .03	**Accepted**

All hypotheses were supported at the 0.05 significance level. Statistical tests used include independent-samples t-test for H1 and PROCESS Model 1 moderation analyses for H2 and H3 (Hayes, 2022).

5. Discussion

The goal of this research was to conceptually replicate and extend previous work interested in perceptions of cognitive and behavioral outcomes of voice-based search interfaces. As described by previous research (Lopatovska & Williams, 2018; Cambre et al., 2020), the results confirm that voice interfaces may create choice simplicity as perceived compared to traditional text-based systems. Importantly, the study extends beyond main effects specifically by exploring when and for whom this effect is created and discovers two moderators as most salient: task complexity and personal innovativeness.

5.1. Theoretical implications

First, the results support the theoretical tenets of Cognitive Load Theory (Sweller, 1988), which posits that learning and decision-making are facilitated when extraneous cognitive load is minimized. Voice interfaces, by providing a linear and guided form of interaction, reduce the mental effort associated with option search and selection, particularly in low-complexity contexts. This simplification contributes to a more manageable decision-making process, reflected in increased perceived choice simplicity (Huffman & Kahn, 1998).

Second, the findings extend Media Richness Theory (Daft & Lengel, 1986), which argues that richer media are better suited to tasks with higher levels of uncertainty or ambiguity. Although voice interfaces are inherently rich in human-like communication cues, their sequential structure may limit their usefulness in high-complexity tasks. This was evident in our moderation analysis: while voice search significantly improved choice simplicity in low-complexity tasks, its effect diminished in high-complexity settings. This result is aligned with previous interface studies suggesting that non-visual interfaces limit multi-option comparisons and require increased working memory capacity (Gove et al., 2012).

Third, the moderation by personal innovativeness in the domain of IT (PIIT) further contextualizes the boundary conditions of voice interface effectiveness. Highly innovative users reported stronger benefits from voice search, suggesting that user traits play a key role in shaping technology perception and effectiveness. This is consistent with Technology Acceptance Model (TAM) findings, where individual characteristics such as innovativeness amplify perceived ease of use and usefulness (Davis, 1989; Im, Bayus, & Mason, 2003). The role of PIIT is also emphasized in UTAUT (Venkatesh et al., 2003), which incorporates facilitating conditions and user readiness as predictors of behavioral intention.

By identifying these moderating mechanisms, the study contributes to a more contingent view of human-technology interaction, suggesting that the cognitive advantages of voice search are not universal but rather dependent on task structure and user profile. Such findings call for a more personalized and context-aware design of intelligent voice agents.

By coupling **Cognitive Load Theory** with **service-dominant logic**, our findings position voice search as a **value co-creation mechanism**, wherein simplified decision paths co-create efficiency and satisfaction with consumers.

5.2. Practical implications

From a UX and design strategy perspective, the findings suggest that voice interfaces are best used in low-complexity, habitual decision-making scenarios, such as reordering familiar products, checking prices, or adding to to-do lists. In these applications, the interface can reduce choices and limit friction in the consumer experience.

For highly complex tasks, however, voice-only interfaces may be insufficient. Users would benefit from hybrid or multimodal systems that combine voice input with visual output, allowing comparison of multiple options in parallel, a need amply documented in decision science (Payne, Bettman, & Johnson, 1993). This finding can inform the design of voice+screen ecosystems in smart home devices, mobile commerce and automotive applications.

Finally, the study demonstrates the value of user segmentation based on personal innovativeness. Computer interfaces can leverage behavioral and psychographic data to adapt interface modes dynamically, subjecting early adopters to voice-first interfaces while working lesser innovative customers through more traditional modalities. This aligns with adaptive personalization strategies to digital marketing (Tam & Ho, 2005; Kumar et al., 2022), wherein user attributes inform interface experience customization. This is also aligned with omni-channel strategy literature highlighting the value of seamless channel orchestration (Verhoef, Kannan, & Inman 2015; Brynjolfsson, Hu, & Rahman 2013).

- Omni-channel orchestration: Integrate voice with visual comparison layers in high-complexity product groups (e.g., electronics) to prevent choice overload.
- Segmentation playbook: Real-time detection of PIIT level to activate voice-first journey vs. visual-rich journey with the goal of increasing marketing ROI.
- Platform competitiveness: For platforms, multimodal search diminishes switching intent, enhancing platform stickiness and long-term customer equity.

5.3. Limitations and future research

Some of the limitations leave avenues for future research. First, while the simulated shopping task mimicked a realistic digital environment, the study was still based on a single-interaction, controlled design. Future research could utilize field experiments or diary studies to track longitudinal patterns of use and real-world behavior (e.g., real purchase conversion, task abandonment).

Second, the study only used perceived ease of choice as the outcome variable. Future models may incorporate mediators such as trust, satisfaction, or cognitive fluency (Gefen et al., 2003), or explore outcomes such as real buying behavior or brand engagement.

Third, other possible moderating variables, e.g., voice assistant sex, trust in AI, privacy concern, or contextual setting, were not considered but might conceivably combine with the voice interface effectiveness (Waytz, Heafner, & Epley, 2014; Moussawi et al., 2021).

Finally, cultural variations were not addressed in this research but may be of specific interest given how technology adoption and privacy norms vary in societies. Replication across cultures would enhance generalizability and reveal how interface perceptions are determined by cultural schemas (Hofstede, 2001; Okazaki et al., 2020).

6. Conclusion

This study contributes to the growing literature on voice-based search interfaces by conceptually replicating earlier findings while sampling two critical boundary conditions: personal innovativeness and task complexity. Using a controlled experimental design, we confirmed that voice interfaces enhance perceived choice simplicity over traditional text-based search, a finding in agreement with earlier literature but further clarifying under what conditions this effect occurs.

Specifically, the utility of voice search is strongest with low-complexity decision-making tasks, where the linear, oral nature of the interface lends itself to efficient cognitive processing. The strength of voice search also increases among consumers with high personal innovativeness, who can be more comfortable with untested technology. These findings confirm that interface effects are not universally experienced, but depend on the task and the user.

By mimicking and building on past work, this study emphasizes the resilience of voice-interface advantage while contributing richer theoretical models such as Cognitive Load Theory, Media Richness Theory and the Technology Acceptance Model. It also calls for increasingly nuanced knowledge of how human–AI interaction is shaped by dispositional and contextual variables. As voice-commerce penetrates increasingly further into daily life, such knowledge is needed for creating inclusive, adaptive and user-adapted interface designs.

Future studies need to explore these dynamics across various user populations, types of decisions and interface modes in order to develop a more comprehensive model of digital decision support systems. Longitudinal and behavioral data also can offer more insight into how voice technology drives not only perception but long-term usage and behavior in the field as well.

In general, the chapter offers actionable points of advice to marketing strategists, showcasing how interface design decisions map onto measurable funnel metrics—from reduced abandonment rates to increased purchase intentions—yet enriches theoretical discussions of digital customer experience and conversational commerce.

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Appendix: Survey Instrument

This questionnaire investigates how different search interfaces influence product selection experiences. All items were measured on a five-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree) unless otherwise indicated.

Part 1 – Demographic Information

1. **Age**: ___ (years)
2. **Gender**

o ☐ Male

o ☐ Female

o ☐ Prefer not to say

o ☐ Other (please specify): ______

Part 2 – Experimental Conditions *(recorded by the researcher)*

· Interface type: ☐ Voice ☐ Text

· Task complexity: ☐ Low ☐ High

Part 3 – Personal Innovativeness (Agarwal & Prasad, 1998)

1. I enjoy experimenting with new information technologies.
2. If I heard about a new information technology, I would look for ways to experiment with it.
3. Among my peers, I am usually the first to try out new information technologies.
4. I like to experiment with new information technologies.

Part 4 – Perceived Choice Simplicity (Huffman & Kahn, 1998)

1. I found the product selection process simple and manageable.

2. It was easy for me to understand my choices.
3. The selection task required little mental effort.
4. Overall, selecting a product felt straightforward.

Part 5 – Behavioral Intention (Venkatesh et al., 2003)

1. I would consider purchasing the product I selected.
2. I am likely to choose this product in the future.
3. I would recommend this product selection method to others.

Manipulation Checks

· "I used a voice-based interface during this task."

· "The decision task was complex and required significant effort."