Consumer Evaluations of Mobile, Conversational Decision Aids for In-Store Shopping: Effects of Decision Strategy Implemented and Consumer Need for Cognition

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Significance. Conversational decision aids employ artificial intelligence (AI) to recognize and support diverse decision strategies of consumers based on a two-way dialog. When implemented as mobile aids, they can allow consumers to gain valuable product knowledge to make an informed choice, given that over 82% of consumers use their mobile devices during in-store shopping (Singh & Jang, 2020). In addition, these aids can serve consumers who may experience cognitive overload due to information processing demands and those who may not have clearly defined product preferences (Bettman et al., 1998). Despite these benefits, there is a paucity of research evaluating mobile conversational decision aids for in-store shopping. Given this gap, we examine the effects of the decision aid's strategy (attribute-/alternative-based) and consumers' need for cognition (low/high) on decision elaboration/effort, decision aid evaluations (perceived usefulness, enjoyment, attitude) and reuse intentions in a semi-realistic store.

Theory and Literature. Based on seminal work in consumer decision-making theory (Bettman et al., 1998), our multi-phased research project designed and developed a mobile conversational decision aid that employed four decision strategies that consumers commonly use. Two were attribute-based (lexicographic and elimination-by-aspects), while two were alternative-based (satisficing and weighted adding) based on whether the decision support began by having consumers think about key attributes or alternatives (brands) for their choice (Kwon et al., 2018). In determining the effectiveness of decision aids with differing strategies, it is important to consider the individual difference variable, Need for Cognition (NFC), which refers to differences in people's inclination for effortful/elaborative thinking (Cacioppo & Petty, 1982).

Consumers operating under low product knowledge/elaboration employ attribute-based processing through attribute-based strategies in initial phases of decision-making by using unstructured, concept-forming information to learn about the relevant attributes within a product category (Sproule & Archer, 2000). On the other hand, consumers operating with high product knowledge/elaboration may initially use alternative-based strategies to evaluate details of the brands they may be familiar with. The above proposition was partially supported by a study that found that an attribute-based strategy was more effective than alternative-based one for consumers with low (vs. high) product knowledge (Wang & Benbasat, 2013). Consumers' use of decision strategies also varies based on the environment for decision-making such that alternative-level thinking is employed for in-store decision-making, whereas attribute-level thinking for online decision-making (Lee & Benbasat, 2010). Given this, if a mobile decision aid can complement consumers' alternative-level thinking in the retail store through attribute-level support, this may enhance the decision aid's perceived benefit. Hence, we propose the following

hypotheses: Consumers' elaboration: (H1) at the start of decision-making will be higher for an attribute-based (vs. alternative-based) strategy, while elaboration at the end of decision-making will be higher for an alternative-based (vs. attribute-based) strategy; (H2) will be higher when the consumer's NFC is high as compared to low; and (H3) will be higher when the decision aid employs an attribute-based (vs. alternative-based) strategy for low (vs. high) NFC consumers and an alternative-based (vs. attribute-based) strategy for high (vs. low) NFC consumers. Further, consumers' decision aid evaluations (usefulness, enjoyment, attitude) and reuse intentions will be greater (H4) when the decision aid employs an attribute-based as compared to an alternative-based strategy; (H5) when the consumer's NFC is low as compared to high; and (H6) when the decision aid employs an attribute-based (vs. alternative-based) strategy for low (vs. high) NFC consumers and an alternative-based (vs. attribute-based) strategy for high (vs. low) NFC consumers.

   Method. A total of 100 consumers were recruited for a consumer experiment employing a 2 (Decision Aid Strategy: Attribute vs. Alternative) x 2 (NFC: Low vs. High) between-subjects design. The diversity of participants in gender (46 men, 54 women) and age (range 19-82, $M =$ 44.7) was assured through a quota sampling procedure. The experiment took place in a semi-realistic home improvement store set up in a simulation retail lab. Participants were randomly assigned to the decision strategies and performed a shopping task to purchase an air filter product using the assistance of a conversational decision aid (implementing two each of attribute- and alternative-based strategies), installed as an app on an android phone. Consumers in each condition chatted with decision aid through text messages that implemented the strategy-based decision support. After the task, they completed measures for elaboration (qualitative entries on the attributes considered) at start/end of decision-making, decision aid usefulness, enjoyment, attitude, reuse intent, and consumers' NFC. The qualitative entries for elaboration were coded by two coders on the type and total number of attributes considered at the start/end with an inter-coder reliability of 96%. Consumers were divided into high/low NFC ($N = 51/49$) based on a median split of the composite scores.

   Results, Discussion, and Implications. Results revealed a marginally significant ($p < .10$) interaction effect for decision aid strategy (attribute vs. alternative) and elaboration at decision making stage (start vs. end) such that consumers' elaboration at the start of decision-making was higher for an attribute-based (vs. alternative-based) strategy, whereas, elaboration at the end of decision-making was higher for an alternative-based (vs. attribute-based) strategy ($M_{attribute\_start} =$ 2.1, $M_{alternative\_start} = 1.9$, $M_{attribute\_end} = 1.9$, $M_{alternative\_end} = 2.2$), partially supporting H1. Elaboration was also higher when the consumer's NFC was high as compared to low ($M_{highNFC} =$ 2.2, $M_{lowNFC} = 1.8$; $p < .05$), supporting H2. However, the interaction effect of decision aid strategy and consumer NFC on decision elaboration was not significant; hence, H3 was not supported. Next, consumers' decision aid evaluations (usefulness) and reuse intentions were greater when: a) the decision aid employed an attribute-based as compared to an alternative-based strategy ($M_{attribute\_usefulness} = 3.6$, $M_{alternative\_usefulness} = 2.9$, $M_{attribute\_reuse} = 3.9$, $M_{alternative\_reuse} =$ 3.5, $p < = .05$); partially supporting H4. Further, low (vs. high) NFC consumers had more positive evaluations of the decision aid with respect to enjoyment ($M_{high} = 3.4$, $M_{low} = 3.9$; $p <$

.05), and attitude (M_{high} = 3.5, M_{low} = 4.0; p < .05), partially supporting H5. However, the interaction effect of decision aid strategy and consumer NFC on decision aid evaluations was not significant; hence, H6 is not supported.

The results offer clear support for our theorizing that attribute-based mobile decision aids are perceived to be more beneficial and lead to greater reuse intent in a physical retail store than alternative-based decision aids since they complement consumers' alternative-level thinking in-store. Mobile decision aids are also evaluated more positively with respect to enjoyment and attitude by low-NFC (vs. high-NFC) consumers since they may not have clearly defined product preferences (Bettman et al., 1998), and may perceive greater value from using the aid. These findings are critical for brick-and-mortar retailers, who may benefit from offering attribute-based decision support in store apps to help their customers in making product choices.

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