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Adoption of Network Externality Products: The Interactive Influence of Self-Construal, Branding Strategy, and Source of Information

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This research examined the influence of consumer, product, and brand factors on the adoption of network externality products—a phenomenon where the utility of a product increases as the number of its adopters increases, e.g. DVD players. Results of two studies revealed, contrary to prior research, relative to interdependent-self consumers, independent-self consumers expressed moderately greater (lower) preference for new network products with a less differentiated feature but compatible technology (a highly differentiated feature but incompatible technology). Moreover, when respondents were told that trial users of new network products were dissimilar, independent-self (interdependent-self) consumers preferred the new network product from a broad (narrow) brand. For similar trial users, consumers of both selves did not differ in their preference between a broad vs. narrow brand.

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EXTENDED ABSTRACT

Given the increasing importance of technological products in the current economy, this research examined the consumer, brand, and product factors on the adoption of network externality products. 'Network effect' or 'network externality' refers to a phenomenon where the utility of a product increases as the number of its adopters increases (Shapiro & Varian 1999). Standard competition is commonly present in the market with network effects (Chakravarti & Xie 2006). Some examples of such products and their competing standards are computer operating system (Windows vs. Mac OS) and DVD formats (Blue-ray vs. HD). In this market condition, consumers encounter a tradeoff between the differentiation of product features and the compatibility with current technology of other products in the market. We later showed that differentiation and compatibility are orthogonal constructs.

Using conceptual underpinnings from literatures in network externality, self-construal, and branding, this research proposes and finds that consumers exhibit different attitude and behavior towards non-network vs. network products. We first hypothesize that when facing non-network products, independent-self consumers, motivated by utility maximization (Aaker & Lee 2001), will prefer highly differentiated but incompatible products whereas interdependent-self consumers, motivated by preference for status quo (Chernev 2004), will prefer less differentiated but compatible products. Conversely, when facing network products, independent-self consumers, who define themselves as more separated from other consumers (Markus & Kitayama 1991), will be less confident in predicting adoption decision of other consumers. Hence, relative to interdependent-self consumers, independent-self consumers will seek compatibility in network products and will show greater preference for less differentiated but compatible network products. On the other hand, interdependent-self consumers who tend to define themselves in relation to others may feel more comfortable to predict behavior of other consumers. They are more experienced in adapting themselves to fit in a larger societal group, thus, should be more capable of coping with the issue of incompatibility. Therefore, interdependent-self consumers will show greater preference for highly differentiated but incompatible network products.

The second study is to further investigate the adoption decision of the highly differentiated but incompatible network products due to greater challenges it faces in the market. We hypothesize that when brand and information from trial users are simultaneously available; consumers consider information from trial users as more influential than brand information (Sheth & Venkatesan 1968). In contrast to the extant literature (Brown & Reingen 1987), the information provided by dissimilar (vs. similar) trial users may be more diagnostic for network product categories because it provides prediction about adoptions of other consumers whose opinions are less predictable. Hence, we anticipate that when consumers receive information from dissimilar trial users, consumers will be motivated to process more information and include brand in their decisions. In such cases, building on the prior literature in branding (Ng & Houston 2006), we hypothesize that independent-self consumers will prefer a brand with existence in multiple product categories (broad brand) whereas interdependent-self consumers will prefer a brand with existence in limited product categories

(narrow brand). In contrast, when similar trial users provide information, which is less diagnostic, consumers will be less likely to incorporate brand in their decision process. Therefore, the two selves will not differ in their preference between a broad vs. a narrow brand.

Two experiments tested these hypotheses. ANOVAs and planned comparisons were used when appropriate. Study 1 aims to establish evidence that consumers varying in self-construal differ in their responses to a network vs. non-network product. In exchange for extra credit, 122 students from a northeastern university participated in a 2 (self-construal: independent vs. interdependent) x 2 (product type: network vs. non-network) x 2 (product strategy: revolution vs. evolution) between-subject experiment. Note that a revolutionary product is highly differentiated but incompatible with current technology while an evolutionary product is less differentiated but compatible with current technology in the market. First, participants were primed into either an independent or an interdependent self. Participants were asked to read information about a new microwave oven vs. a new cell phone in the non-network vs. network condition, respectively. Then, participants rated their attitude towards the focal product. Results showed no difference in attitude scores between the two selves in the non-network condition for both product strategies ($p > .1$). However, consistent with the prediction, independent-self participants, relative to their interdependent-self counterpart, reported more positive attitude towards the less differentiated but compatible network product and reported less positive attitude towards the highly differentiated but incompatible network product ($p < .1$).

Study 2 aims to examine how consumers varying in self-construal rely on brand and information from trial users when encountering a revolutionary network product. 145 students from the same university with those in study 1 were randomly assigned into a 2 (self-construal: independent vs. interdependent) x 2 (brand breadth: broad vs. narrow) x 2 (trial users: similar vs. dissimilar) between-subject experiment. Participants, primed into either an independent or an interdependent self, were asked to read information about a new cell phone in the market with a highly differentiated feature but incompatible technology with other cell phone technologies in the market. Participants in the broad (*narrow*) brand condition read that this new cell phone was offered by Samsung (*Motorola*). Participants in the similar condition were shown feedback from trial users who are college students in New York, where the experiment was conducted. Those in the dissimilar condition were shown feedback from trial users who are college students in California. Then, participants rated their attitude, buying likelihood and willing-to-pay amount for the product. Results were significant and consistent across three dependent variables. When the similar trial users presented information about the new product, the two selves showed no difference in preference between a broad and a narrow brand ($p > .1$). When the dissimilar trial users presented the same information, independent-self participants showed greater preference for the new cell phone from a broad brand whereas interdependent-self participants showed greater preference for the new cell phone from a narrow brand ($p < .05$).

Along with managerial implications, this research has important theoretical contributions both to the self-construal literature

and to the network externality literature by providing evidence that independent-self consumers may avoid innovation when the incompatibility is a concern. The research contributes to the branding literature by identifying the boundary condition for the brand breadth effect— independent-self consumers prefer a broad brand while interdependent-self consumers prefer a narrow brand, only when the information is sufficiently diagnostic to reduce risk. Managerially, the research suggests that, under the influence of network effects, trial feedback from users who are dissimilar to the target consumers should be used for broad brands in the markets dominated by an independent culture and for narrow brands in the markets dominated by an interdependent culture.

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