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## **EURAM conference**

# **How Artificial Intelligence in Smart Devices Affects Customer-Brand Relationships**

João Guerreiro, ISCTE-Instituto Universitário de Lisboa and BRU-Business Research Unit

Sandra Maria Correia Loureiro, ISCTE-Instituto Universitário de Lisboa and BRU-Business  
Research Unit

### **Abstract**

This paper explores how customer-brand relationships are built during the interaction of users with artificial intelligence (AI) enabled smart devices. Although the market of smart devices and AI-enabled technology is still in its infancy, such interactions will develop to become an important part of our daily activities. Such AI agents, will help consumers to perform their daily activities, to decide on the products that may fit them better and even engage in thoughtful discussions regarding consumer's beliefs and values. Therefore, understanding what may drive consumers to approach or avoid, maintain or terminate, enhance or not a relationship with an AI agent is of particular important for the future. The Attachment-Aversion (AA) theory is used to propose and test a conceptual model of how AI in smart devices may affect customer-brand relationships. Results show that enriching the self has the highest effect on AA relationships and on motivational strength to continue the relation. The paper concludes by discussing the findings and highlighting the main theoretical and managerial contributions of the study.

# How Artificial Intelligence in Smart Devices Affects Customer-Brand Relationships

## Introduction

Over the years, especially in the last decade, Artificial Intelligence (AI) has developed from an active research field focused on improving its techniques and algorithms to being embedded in our everyday lives. Today, there are many examples of AI systems being embedded in self-driving cars, surveillance cameras and in voice-assistant smart devices and consumers are expected to spend more than \$150 billion annually only in smart home assistants by 2023 (Statista, 2020a). Companies such as Google (Google Home), Amazon (Alexa) and Apple (Siri) have been focused on extending their offering to smart devices able interact with their consumers and handle daily activities such as ordering food or controlling IoT (Internet of Things) enabled devices. In fact, the total installed base of IoT connected devices is expected to reach 50 billion devices, all connected to the Internet and spanning from TV screens to kitchen appliances (Statista, 2020b). Most IoT objects will have embedded AI agents or be controlled by AI agents in order to help user's daily activities. Such Human-AI interactions, particularly if filled with anthropomorphic and emotional cues, may lead consumers to develop a sense of connectedness which may affect behavioral intentions and attitudes (Kang and Kim, 2020). Yet, the study of how Human-AI relationships will unfold is still in its infancy. The current paper adds to the literature by testing how AI-enabled smart devices affect customer-brand relationships. Park *et al.*, (2013) and Schmitt (2013) Attachment-Aversion theory is used to explain such behavior. In the following sections we define the AA theory and draw from it a set of hypotheses on how we suggest AI-enabled smart devices may affect customer-brand relationships. We then discuss the findings and how they may contribute to both the literature and managerial practice.

## Literature Review

As smart devices powered by AI become more information aware, they also gain the ability to recommend and sometimes even decide (e.g. deciding the next best music to play on Spotify). Such intelligence driven from customer-data allows the AI agent to establish a close relationship with the user and consequently with the brand that the AI agent represents. In this vein, here we find support on the attachment-aversion (AA) theory (Park, 2013; Schmitt, 2013) to go further in understanding the role of artificial intelligence enabled-devices in customer-brand relations. The AA theory is based on Fournier's (1998) anthropomorphic view of customer-brand relationships. Fournier's (1998) perspective is based on theories such as interdependency theory and theories of attraction. Attachment theory comes from studies of parent-child relationships and continues through adulthood to romantic relationships, kinships, and friendships (Loureiro, 2015). Several studies suggest that emotional attachment is formed between human beings and animals, places, destinations, special objects, brands (e.g., Ahuvia, 2005; Yuksel *et al.*, 2010), and even human brands or celebrities (Thomson *et al.*, 2006). Thus, attachments reflects an emotional bond similar to love.

The AA theory suggests that feelings and emotions (affective dimension), actions and interactive experiences (behavioral dimension) and convergent/analytical thinking and divergent/imaginative thinking about a brand (intellectual dimension) – the marketing determinants - may influence if a brand entices or annoys the self, enables or disables the self, or enriches/impoverishes the self – the psychological determinants (Schmitt, 2013). Such determinants are then suggested to have a role in explaining attachment-aversion relationships (brand prominence and brand-self distance) and motivational strength (approach, avoidance and enhancement).

Following the AA theory, we suggest that experiences between consumers and the AI agent in the smart device positively enables the self – a functional benefit which refers to the extent to which the smart device satisfies the needs of the consumer and helps the consumer to manage daily activities. Indeed, the psychological distance between the AI agent and the consumer self can be influenced by the extent to which the AI agent is able to create a sense of an efficacious self, enabling the human being to exert control over her/her environment so as to approach desired goals, eliminating or avoiding the undesirable ones. If the AI agent is able to make consumers feel in control of their selves (Giles and Maltby, 2004), then the psychological distance will be shorter and the motivational strength higher. Here, behavioral experience represents the physical actions that consumers can take due to the relationship they develop with the AI agent. This behavioral response results from the stimuli that are part of an AI agent's design and identity, and environments (Lakoff and Johnson, 1999). For instance, the continuous use of an AI agent may stimulate consumers to buy more books (reading more) or travel more often (booking destinations for lower prices). Hence, we suggest the following hypotheses:

**H1:** Behavioral experience is positively associated with the enabling (disabling) the self.

**H2:** Enabling (disabling) the self is positively associated with the AA Relationships.

**H3:** Enabling (disabling) the self is positively associated with the AI agent-customer relationship motivational strength.

Affective experiences induced by sensory or aesthetic elements (e.g., auditory, tactile, or olfactory sensations) from the AI agent can have a power effect on consumers' psychology by developing the feeling a pleasure or displeasure (Krishna, 2012). The psychological distance from an AI agent is short when the customer really appreciates its aesthetically characteristics. The opposite may also occur when the AI agent is aesthetically displeasing (Park, Eisingerich, and Park, 2013). Therefore, the affective experiences may entice (annoy) the self, influencing

the AA relationships and consequently the AI agent-customer relationship motivational strength with the consumer. Formally:

**H4:** Affective experience is positively associated with the enticing (annoying) the self.

**H5:** Enticing (annoying) the self is positively associated with the AA Relationships.

**H6:** Enticing (annoying) the self is positively associated with the AI agent-customer relationship motivational strength.

AI agents can also embrace symbolic meaning, communicating to the consumer what they are and creating a relationship between the AI agent and the consumer that extends the self of the consumer (Belk, 1988). This situation may be possible through an intellectual experience, when the consumer tends to stimulate the consumer curiosity and make consumer think.

Consumers' identity can be represented by and AI agent and be appreciated by the consumer over time and exposed to the outside world (Richins, 1994). Yet, an AI agent may also reflect the consumer aspiration, or ideal future self by showing new situations and alternatives of products, experiences, destinations that consumers may have or visit in the future. Thus, when an AI agent is able to represent the consumer self or the desire self, it can offer symbolic pleasure and enrich the self, leading to a higher level of attachment. Yet, the opposite is also possible, when an AI agent impoverishes the consumer self by representing an identity that is one is strongly against the consumer, leading to aversive reasons (Johnson *et al.*, 2011; Park, MacInnis, and Priester, 2006) and lower the relationship motivational strength. Therefore:

**H7:** Intellectual experience is positively associated with the enriching (impoverishing) the self.

**H8:** Enriching (impoverishing) the self is positively associated with the AA Relationships.

**H9:** Enriching (impoverishing) the self is positively associated with the AI agent-customer relationship motivational strength.

Finally, as suggested by Park *et al.* (2013), we posit that AI agents embedded in smart devices that are able to establish stronger AA relationships (having a high brand prominence and being close in terms of brand-self distance) will also lead to a higher motivational strength to continue the relation. Hence:

**H10:** AA relationships positively affect the AI agent-customer relationship motivational strength.

## **Methodology**

An online survey was conducted focusing on both US and Indian consumers via the Amazon Mechanical Turk (MTurk). The survey measured affective, behavioral and intellectual marketing determinants (based on Brakus *et al.*'s (2009) scale). Enticing, enabling, enriching, AA relationship and motivational strength were measured based on Park *et al.*, (2013) scale. A total of 97 consumers (31.3% women and 68.7% men) that owned and used a smart device for at least a month were invited to participate in the study. The sample had 45.2% participants from India and 54.8% participants from the US and had an average age of 31 years old.

A reflective PLS-SEM model was estimated with all outer loadings equal or above 0.7 and reliability measures confirming to the standards with all composite reliability scores above 0.7 and AVE above 0.5 (Hair *et al.*, 2010; Bagozzi and Yi, 1988). There were also no multicollinearity effects. Since AA relationships is a construct with two dimensions, a second-order construct was estimated from both brand prominence and brand-self distance.

## **Results**

Results show that the affective dimension of the smart device experience is positively related to enticing psychological determinants ( $\beta=.328$ ,  $p < .001$ ), the behavioral marketing determinants of the experience positively enables consumers ( $\beta=.250$ ,  $p < .05$ ) and the intellectual experience has a positive relationship with enriching consumers ( $\beta=.499$ ,  $p < .001$ ).

Enticing, enabling and enriching explain 51.3% of AA relationships and the constructs explain 80.2% of the variance of motivational strength. Regarding the mediating effect of AA relationships between psychological determinants (enticing, enabling and enriching) and motivational strength, results show that only enriching has a significant positive effect on AA relationships ( $\beta=.656$ ,  $p < .001$ ), which suggests there is a partial mediation given that the indirect effect of enriching  $\rightarrow$  AA relationship  $\rightarrow$  motivational strength ( $\beta=.220$ ) is significant at  $p < .01$ . Yet, enticing ( $\beta=.174$ ,  $p < .05$ ) and enabling ( $\beta=.239$ ,  $p < .05$ ) have a positive and direct effect on motivational strength.

Figure 1 shows the conceptual model and results of the PLS-SEM.

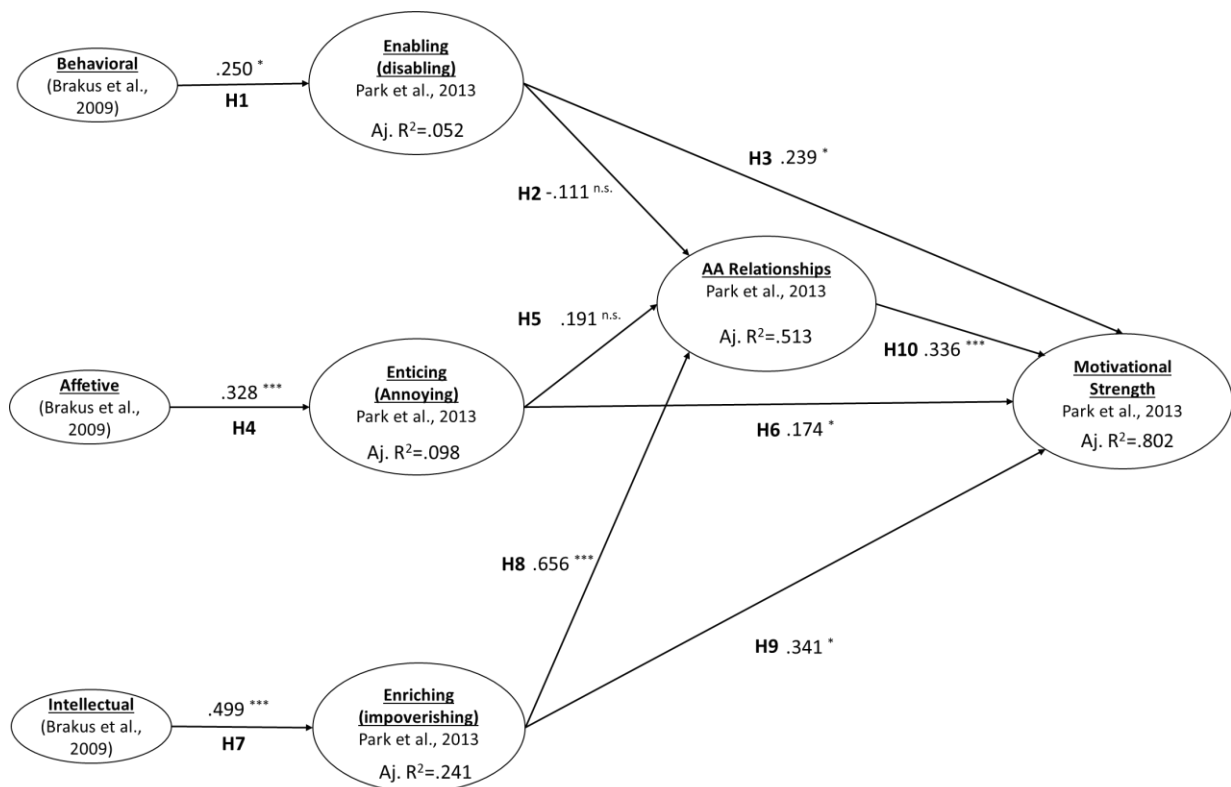


Figure 1 – Conceptual Model and SEM results. Note: The \*\*\*, \*\*, and \* indicate p-values less than 0.001, 0.01, and 0.05 respectively.

## Discussion and Conclusion



The current paper shows that AI agents embedded in smart devices in fact create an experience that leads consumers to feel enabled based on the behavioral type of relationship (**H1 is supported**), feel enticed following an effective experience (**H4 is supported**) and feel enriched given the intellectual interactions with the AI agent in the smart device (**H7 is supported**). Such effects empirically confirm the framework proposed by Schmitt (2013) in which he suggests that marketing determinants should stem from experiences evoked by the brand-related stimuli (Brakus, 2009).

Regarding the role of psychological determinants (enabling, enticing, enriching) in explaining AA relationships, results do not show a significant relation between enabling and AA relationships and between enticing and AA relationships (**H2 and H5 not supported**). However, there is a direct effect between those constructs and motivational strength. In fact, the study confirms that if the relationship with the smart device helps consumers to manage their daily lives and extract functional benefits from the relation (enabling), thus, the motivational strength to continue the relation also increases (**H3 is supported**). The same occurs when the AI agent is able to entice the consumer (**H6 is supported**). Finally, the extent to which the AI agent expresses, represents and reinforces the consumer values is positively related to both AA relationships and motivational strength (**H8 and H9 are supported**). AA relationships based on brand prominence and brand-self distance also have a positive effect on motivational strength (**H10 is supported**), thus conforming with the AA theory (Park *et al.*, 2013).

Despite the increasing use of AI-based smart devices as a way for consumers to interact with brands to buy products or to manage their daily lives, there is still a lack of research on how such relation unfolds. This paper empirically tests and confirms the validity of the AA theory on customer-brand relationships using artificial intelligence enabled-devices. Such findings may present valuable insights for managers that want to design AI systems to interact

with their consumers in the future. For example, one of the key findings shows that in the case of AI-enabled relationships, the symbolic benefits that the consumer takes from the sense of enrichment is the one with the highest effect on both AA relationships and motivational strength. Therefore, the motivation to continue the relation is strongly affected by how the system is able to express, represent and reinforce the consumer's values, which may be a useful contribution for understanding how human-AI relations unfold.

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