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## The effects of mental simulations, innovativeness on intention to adopt brand application

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## ABSTRACT

This study explores three important factors—mental simulation, innovativeness, and need for cognition—to determine the effects of these factors on the perception of newly developed branded applications. The study identifies two types of mental simulation (process-focused and outcome-focused), innovativeness (early and later adopters) and need for cognition (low and high) to inform items used to survey respondents about their willingness to adopt new branded apps and their attitudes towards the focal brands.

The study demonstrates the effects of mental simulation, innovativeness, and need for cognition on adoption of the branded app. This experiment improves our understanding of how three-way interaction between the abovementioned factors affects the intention to adopt a new branded app. The results of a MANOVA indicated statistically significant effects of the abovementioned three-way interaction on the dependent variables. It is anticipated that the analysis resulting from this valuable study will provide a point of reference for further empirical and theoretical studies on the development of information technology products and services.

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## 1. Introduction

Today's dynamic business environment is pushing many firms to develop more efficient and effective ways of developing and marketing new products and services. Although many firms have dedicated considerable effort to understanding the determinants of new product success and failure, the successful development of innovative new products tends to be the exception rather than the rule (Cooper, 1996; Sethi, Smith, & Park, 2001). Companies from a variety of industries have recognized developing innovative new products as the cornerstone of success and as an essential factor for surviving in today's markets (Envik & Wall-Mullen, 2009). Innovative new products that support marketing success allow consumers to do something they have not been able to do before (Zhao, Hoeffler, & Zauberaman, 2011). Companies from a wide range of industries, including automobiles, electronics, and information technology have learned to use the captive audience provided by marketing communication channels to commercialize their product innovations. Generally speaking, consumers tend to have less knowledge about and greater performance uncertainty concerning

innovative new products (Hoeffler, 2003) as well as negative inferences about such products and new product evaluation (Mukherjee & Hoyer, 2001). Consumers rely more on inferences with high learning costs when evaluating highly innovative attributes in highly complex products (Mukherjee & Hoyer, 2001). To capture the learning process involved in evaluating new product innovations, this study uses mental simulation as a variable. Consumers engage in mental simulation to reduce the effort involved in evaluating newly developed products (Zhao, Hoeffler, & Zauberaman, 2007).

As corporations strive to develop new strategies for marketing, advertising, and running promotions in response to these changes in digital lifestyles and consumer trends, the need for smart marketing platforms has increased accordingly. Despite growing demand for brand apps—software programs whose content is used to deliver product and brand information to consumers and encourage aggressive participation and interactions between the consumer and the brand—few studies have focused on the development of user-friendly brand strategies and consumer responses to brand apps. Predicting consumer responses based on personality traits is becoming crucial in designing new brand apps. Relevant personality traits include *innovativeness* and *need for cognition* (hereafter “NFC”), which have been shown to influence consumers

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when adopting new products. Consumer acceptance of new products can be affected by the relationship between consumer innovativeness or new technology adoption and NFC.

In addition to personal consumer traits, other factors that stimulate consumer purchase intention include advertising and promotions that contingently evoke a purchase situation. In promotional activities, consumers are stimulated to visualize a virtual or hypothetical circumstance, and that process is called *mental simulation* (Taylor & Schneider, 1989). Because a wide range of factors seem to affect simulation results, it is important to identify factors that influence mental simulation in a way that makes it conducive to generating desirable attitudes and behaviors in consumers. In this study, we wanted to verify the effects of consumer innovativeness and need for cognition on mental simulation results. Thus this study attempts to demonstrate the differential effects of process- and outcome-focused thinking generated by innovativeness and NFC. The study also explores three-way interaction between mental simulation, innovativeness, and NFC as a factor affecting intention to adopt a newly developed brand app and consumer attitude towards the associated brand.

## 2. Literature review

### 2.1. Brand application environment

The role of digital applications that deliver a brand's messaging—brand apps—is expanding beyond offering a new kind of product experience to consumers. Brand apps are designed to run on smartphones or tablet PCs with the aim of promoting and selling goods and services. The role of brand apps has expanded dramatically with the advent of smartphones and tablet computers that are equipped with super-fast Internet connections, highly functional hardware, a large touchscreen display, a vibration sensor, and global positioning system (GPS) functionality.

Brand apps offer more than a product or service experience, as they are crafted to address consumer lifestyles and eventually deliver a *brand* experience. A brand app is useful for strengthening connections with customers through instantaneous interaction, making it an important marketing tool, regardless of its role in providing information (Marc, 2002). Therefore, with the growing use of mobile platforms for brand promotion, the development of brand apps reflecting consumer needs has increased, and investigation appears necessary to determine the actual effectiveness of those apps. Brand apps that run on smartphones offer both cognitive and behavioral experiences in which the former is associated with the acquisition of product information and knowledge, and the latter involves exploring products using virtual reality technology. Moreover, user experiences and product information collected from brand apps can be shared through social network services (SNS) such as Facebook, leading to affective and relational experiences. In particular, brand apps for 3D virtual mobile devices provide users with rich sensory experiences while exploring virtual products in a realistic way.

Independently of its use in marketing, the concept of *gamification* has emerged as a means of enhancing the user experience by engaging users in game-like behavior. Gamification has recently drawn attention as a new marketing technique as well. Gamification is the addition of the game design concept to non-game contexts such as websites based on user interest or applications such as human resources portals to encourage users or employees to participate in various activities. As the gaming population has steadily increased based on the basic human desire to play, the use of gamification extends to real-world problem-solving beyond its role in enhancing virtual entertainment.

Gamification enables marketers to manipulate user behaviors by making technology interesting and exploiting the human desire to play games (Jin, 2013; Kapp, 2012; Swan, 2012; Xu, 2011). These techniques are used to turn something boring into an interesting experience. Gaming principles combine cognitive fun with the reward of winning or accomplishing something. By applying game design to real-world tasks, for example, workers can have fun and be more engaged at work, making them happy in pursuing their work-related goals. Gamification motivates users to participate actively using stories and aesthetics and enhances step-by-step learning, during which user engagement continues, increasing the ability to solve problems.

Contemporary leisure activities drive the integration of game mechanics into marketing strategy. The vast majority of people in their 20s and 30s enjoy games in their spare time. The popularity of games has led some marketers to view gamification as a crucial factor in business success. More broadly, gamification attempts to solve real-world problems using the functionality and attractive power of games to encourage users to solve problems for themselves. Gamification also involves using game-playing techniques to prompt the use of an application. The question is, can gamified brand apps encourage users to behave as intended? According to the 2010 Gartner report, in the very near future gamification services will be widely adopted by web sites such as Facebook and Amazon to drive sales and customer services, and approximately 70% of multinational corporations will offer at least one mobile application with gamification features (Goasduff & Pettey, 2011). Gamification strategies have great potential to influence and motivate consumers and can be widely used for health, welfare, and education/training in both the private and public sectors, not to mention in customer service and human resources management (Bunchball, 2010).

### 2.2. Innovativeness

Innovativeness is defined by Rogers (2003) as the degree to which an individual is willing to adopt new ideas earlier than other members of his or her social system. Rogers also observed that people who are more innovative in this sense are more aggressive in seeking information about new ideas, seek to build broader interpersonal networks, and seek greater exposure to mass media compared with others. Midgley and Dowling (1978) explained consumer innovativeness by comparison with innate innovativeness, which is defined as the degree to which an individual is sensitive to new ideas. Midgley and Dowling claimed that innovativeness affects consumer behavior and the decision-making process.

Innovativeness is an important factor in new product adoption behaviors because it influences both adoption itself and the rate of adoption (Faxall, 1988). Rogers (2003) cited relative advantage as one of the characteristics that motivates innovators to adopt an innovation even when its effectiveness has not been verified. Relative advantage is the degree to which an innovation is perceived to be better than existing ideas or products, and it is measured in terms of social prestige, satisfaction, and convenience as well as economic advantage. Therefore, relative advantage depends on the adopter's subjective perception of benefits provided by an innovation rather than any objectively measurable advantage of a new product. It is therefore believed that innovators are earlier in adopting a new product when they perceive it as offering greater relative advantage, although objective advantage still matters.

Compared with innovators, non-innovators are risk-averse and prevention-focused regarding goal pursuit when choosing a new product. Prevention-focused consumers have a tendency to avoid the risks associated with a product and its new attributes by

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