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Influence of lapse of time when measuring causes and effects in the consumption of online services☆

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ABSTRACT

The intention to continue to use is a basic variable in the processes of consuming goods and services because such intention affects the organizations' wealth and surviving capacities. Commonly, researchers measure the continuance intention when the users are still receiving the service. Contrariwise, the main contribution of the present research is to measure the variables of consumer behavior as a sequence of events, thus providing a time gap that allows researchers to detect and measure the causes and the effects in the relationships among variables. The conclusions of the research are relevant both from an epistemological viewpoint and from the perspective of the marketing strategies suitable for services whose consuming processes are susceptible to time lapses.

1. Introduction

Although the initial use is an important indicator of the success of the implementation of an information system (IS), this initial use does not imply the result that organizations desire unless the use of the product continues. Long-term viability and success of technological firms rest on the continuance of use of the new technology rather than on users' first position, making the study of the factors that influence the continuance intention more relevant (Choi, Kim, & Kim, 2011; Gan & Li, 2015; Oghuma, Libaque-Saenz, Wong, & Chang, 2015).

Bhattacherjee's (2001) model, one of the most common in the literature, explains the antecedents of users' continuance intention. Bhattacherjee and Premkumar (2004) and Venkatesh, Thong, Chan, Hu, and Brown (2011) complete this model. These models relay on mediated relationships. Because the mediated relationships that researchers study are a sequence of events, research should consider Cole and Maxwell's (2003) questions; that is, when analyzing a sequence, the researcher must measure cause, mediator, and effect in different periods.

This study aims at providing an in-depth knowledge about the antecedents of the continuance intention by analyzing which is the relevance that the measuring time of each group of variables has on the behavior of the model. This study tests the hypothetical effects of measuring the continuance intention during the lapse in using the service instead of measuring the continuance intention when users are still using the service.

The structure of the article is as follows: The theoretical framework analyzes how models that try to describe consumer's behavior incorporate mediating relationships, and how time lapses affect consumer's beliefs. The method section introduces the model for the research and the fieldwork. The following section presents the results. The last section displays the discussion of these results, conclusions and limitations of the study.

2. Theoretical framework

2.1. Mediated relationships in the consumer behavior models

Models that ground on mediating variables postulate the existence of a mediating variable (M) that transmits the effect of the predictor variable (X) on the result variable (Y) in a causal sequence so that X causes M, which causes Y. Sobel (1990) points out that a mediator must satisfy at least two additional requirements: M must truly be a dependent variable relative to X, which implies that X must precede M in time; and M must truly be an independent variable relative to Y, implying that M precedes Y in time.

Several studies show that the estimators for the mediated effects in cross-sectional samples present strong biases in comparison with the estimates through longitudinal mediated effects (MacKinnon & Fairchild, 2009). On other occasions, to overcome such methodological limitations, the observer may use half-longitudinal designs if the measures of the mediating variable and the result take place in the same

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period of time but not when the measure of the exogenous variable takes place before (Cole & Maxwell, 2003).

Ideally, researchers collect data on the cause, the mediator, and the effect at each of these time points (or waves). Such data allow the investigator to implement statistical controls for prior levels of the dependent variables using SEM (Cole & Maxwell, 2003).

2.2. User beliefs, continuance intention, and the passing of time

User beliefs and attitudes are the key determinants of both initial IT usage (acceptance) and long-term usage (continuance) intention and behavior. The use of a product can change the perception and attitude towards the product. One's beliefs and perceptions after use of the product or service may not be the same as those at pre-adoption stage. When the users have experience and first-hand knowledge, their attitudes and beliefs will be more descriptive and specific (Kim & Oh, 2011). The information that consumers receive through a direct relationship with sellers updates consumers' expectations, thus renewing their attitudes towards the brand (Ha, John, John, & Kim, 2013). The beliefs and attitudes will probably fluctuate over time, and any change in these beliefs and attitudes may lead to the corresponding effect on the continuance intention to use the online platform (Bhattacherjee & Premkumar, 2004). At post-adoption stage, direct interaction with the information system triggers re-evaluation of initial cognitions that rest on usage outcomes (Saeed, Abdinnour, Lengnick-Hall, & Lengnick-Hall, 2010).

Longitudinal research suggests a decreasing effect of the ease-of-use (Premkumar & Bhattacherjee, 2008), and no consensus exists on the effect of perceived usefulness of users' intention in the different usage stages (Bhattacherjee, 2001; Szajna, 1996; Venkatesh & Morris, 2000). Bhattacherjee and Premkumar (2004) verify how the perceived usefulness and the perceptions of attitudes tend to fluctuate over time and that such changes will be more relevant in the first stages of using the information technology.

Most studies focus on the variables once the user adopts or is using a technology, but fewer studies aim at analyzing the continuance intention once the user stops using the service. Some technical reasons lead to believe that the perceptions regarding the service provision can change over time (O'Neill & Palmer, 2004). The explanation for this effect lays in the source of expectations. Direct experience with a service is a powerful source of information for forming beliefs and attitudes. A high consistency level exists between attitudes and behavior (Kim & Oh, 2011). The cognitive elements before the use relay generally on second-hand information, which may be unrealistic and will lead to less reliable or stable cognitive elements. As time goes by, users gain first-hand experience and assess their prior expectations; users review these prior expectations to reach a higher level of consonance. The cognitive elements are easier to change than behavior. As time elapses, the cognitive elements become stable: they root in behavior and become more realistic (Bhattacherjee & Premkumar, 2004). Keaveney and Parthasarathy (2001) propose that frequent use increases the positive attitude of consumers and provides them with more realistic and correct expectations about behavior, thus reducing dissatisfaction.

3. Method

3.1. Model development

This study analyzes the differences between the effect of the pre- and post-attitudes and beliefs on the continuance intention depending on the time of measuring of continuance intention. To do so, this research measures the continuance intention both during the use of the platform (t_2) (Model 1) and after a gap in this use (t_3) (Model 2). The analysis of how the model works for each belief appearing in this study uses five structural models, one for each belief: effort expectation, perceived usefulness, social influence, trust, and facilitating conditions (Fig. 1).

3.2. Fieldwork

The universe of this research consists of approximately 3000 Spanish SME firms that accessed professional on-line training. To acquire the data, the participants received an email with a link to an online questionnaire about the e-learning platform that the participants were going to use, before entering into contact with this platform (495 valid responses). The duration of the course was three weeks; therefore, the researchers sent a second questionnaire during week two (133 responses). Six months after the end of the course, the participants received a third questionnaire to analyze users' intention of continuing to use the online courses (121 responses).

The measuring of the constructs followed Venkatesh et al.'s (2011) scales to measure satisfaction, expectations and disconfirmation (of perceived usefulness, effort expectancy, facilitating conditions, social influence and trust), attitudes and continuity intention with three items for each. The analysis of statistical behavior of the constructs included in the model comprised the development of Structural Equations Model (SEM) with Smart PLS 2.0.M3.

4. Results

4.1. Measurement model

The analysis maintains all elements because they have a load of over 0.707 and the necessary significance level (Hair, Ringle, & Sarstedt, 2011). Convergent-validity testing comprises the analysis of the average variance extracted (AVE), whose values should exceed 0.5. To establish discriminant validity, the AVE value must be greater than the variance common to a construct and the other constructs. In the models in question, the constructs meet the condition, so the analysis confirms the discriminant validity (Fornell & Larcker, 1981).

4.2. Structural model

In the assessment of the structural model, the bootstrap test and R^2 determine the predictive relevance estimate and the path coefficients and their significance. Regarding the relationships that the model suggests, the relationship between prior and subsequent attitudes is not significant for perceived usefulness, effort expectation, facilitating conditions, and trust. The relationship between prior beliefs and satisfaction is also not significant for perceived usefulness, effort expectation, social influence, and trust. The relationship between the prior expectations and disconfirmation is not significant either when referring to effort expectations and facilitating conditions. The relationship between the subsequent beliefs and subsequent attitudes is not significant for social influence.

The relationship between the post-usage attitude and continuity intention for the effort expectation is not significant if the analysis measures continuity intention once the usage stops and the social influence and facilitating conditions are absent. If the analysis measures intention in the third wave, the relationships between prior and subsequent attitudes and prior and subsequent beliefs are also not significant for social influence. The same occurs in the relationship between the subsequent beliefs regarding the facilitating conditions and intention.

Regarding the R^2 value in Table 1, the analysis meets the necessary values in most cases (Hair et al., 2011) except for the prior attitude and disconfirmation in Model 1 and for the prior attitude, continuance intention, and disconfirmation in Model 2.

4.3. Relationship between subsequent beliefs and attitudes and the continuance intention

A multigroup analysis helps to establish the differences between the effects of beliefs and attitudes on continuance intention depending on the moment in which this measurement takes place, on the basis that

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