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INNOVATION IN LOW-INCOME MARKET: A STUDY BASED ON THE SYMBOLIC PRODUCTION AND CULTURAL REPRODUCTION

INOVAÇÃO NO MERCADO DE BAIXA RENDA: UM ESTUDO COM BASE NA PRODUÇÃO SIMBÓLICA E REPRODUÇÃO CULTURAL

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ABSTRACT

The paper analyzes the interaction between symbolic production and cultural reproduction in low-income consumers market, affecting the attitudes towards the innovation adoption. This effect influences purchase decision regarding the characteristic of innovation intensity. The theoretical background involves: first, culture and consumption are represented by symbolic production and cultural reproduction, second, the innovation adoption that is categorized into early and late, third, the innovation intensity that is categorized into radical and incremental. A total of 390 low-income consumers were surveyed and the data was analyzed using the Structural Equation Modeling. The results show that early adopters prefer radical innovations instead of the incremental one, favoring those products that have higher sophistication and technology. On the other hand, late adopters prefer incremental innovations, because they are more cautious and uncertain about the risks that innovation can cause.

Keywords: innovation adoption, innovation intensity, symbolic production, cultural reproduction, low-income market.

RESUMO

O artigo analisa a interação entre produção simbólica e reprodução cultural no mercado de baixa renda, que afeta as atitudes em relação à adoção da inovação dos consumidores. Esse efeito influencia a decisão de compra em relação às características da intensidade da inovação. O aparato teórico envolve: primeiro, cultura e consumo representados pela produção simbólica e reprodução cultural, segundo, a adoção da inovação que é categorizada como inicial e tardia, terceiro, a intensidade da inovação que é categorizada como radical e incremental. Foram pesquisados 390 consumidores de baixa renda, os dados foram analisados utilizando-se a modelagem de equações estruturais. Os resultados mostram que os adotantes iniciais preferem inovações radicais, em vez de inovações incrementais, favorecendo os produtos com alta sofisticação e tecnologia. Por outro lado, os adotantes tardios preferem inovações incrementais, porque eles são mais cautelosos e incertos em relação aos riscos que a inovação pode causar.

Palavras-chave: adoção da inovação, intensidade da inovação, produção simbólica, reprodução cultural, baixa renda.

INTRODUCTION

Traditionally, the concept of innovation is related to issues associated with technology, modernity, electronics and high-tech products (Christensen, 1997; Kuczmarski, 2003; Prahalad, 2011). Therefore, often associated with this concept is the idea of high production costs, research and development, reflecting higher prices to the end consumer. However, researching and managing innovation in the academic field and in the market goes beyond the work in R&D laboratories spread across universities, large companies and technology centers (Rogers, 1962, 2003; Burns and Stalker, 2000).

Thus, this study seeks to involve theoretical pillars that address innovation, as well as culture and consumption, within a context apparently averse to innovation, the low-income market. Within the area of culture and consumption, symbolic production is characterized initially by the values, beliefs, habits and symbols produced by consumers from a perspective of the social structure (Sahlins, 1976; Douglas and Isherwood, 1996), in this case, the low-income market. On the other hand, cultural reproduction is characterized by the permanent process of construction, deconstruction and reconstruction, that is, a continuous cycle of cultural reproduction (Jenks, 1993).

In relation to innovation, two perspectives are addressed. Firstly, the adoption of innovation suggests that people can be at different stages of adoption, which ranges from the earliest to the latest (Christensen, 1997; Rogers, 2003; Nakata and Weidner, 2012; Rai *et al*., 2013). The second approach is the intensity of innovation, in the product, process or organization, which varies anywhere along a scale between radical and incremental. Yet, the empirical object of all this theoretical apparatus is the low-income market, which also has its theoretical peculiarities regarding buying behavior and choice of products (Prahalad, 2005; Anderson and Billou, 2007; Varadarajan, 2009; Barki and Parente, 2010; Nogami *et al*., 2012; Barki *et al*., 2013; Nogami *et al*., 2015).

With respect to the low-income market, a notable estimate of the size of this market globally is given by the sum of the consumption potential of the low-income population from nine emerging countries (Argentina, Australia, Brazil, China, India, Mexico, Russia, South Africa and Turkey) and the comparison with that of five developed countries (France, Germany, Italy, Japan and UK) (D'Andrea *et al*., 2006). The market of these nine countries totals US$ 12.5 trillion, which is greater than the sum of the market of the five powers. Another estimate of the market size globally involves the projection of the population in emerging regions. According to the United Nations and the World Resources Institute, the expectation for 2015 is that Asia, Africa and Latin America will have more cities with over one million people (Prahalad and Hammond, 2002; Prahalad and Hart, 2002; Simanis and Hart, 2009).

Still in a global context, regarding geographic segmentation, it is possible to identify four large macroregions that concentrate the low-income population in the world: Africa (12.3%), Asia (72.2%), Eastern Europe (6.4%) and Latin America and the Caribbean (9.1%) (Hammond *et al*., 2007). In Africa and Asia, these people live predominantly in the countryside; in Eastern Europe and Latin America and the Caribbean, the phenomenon known as rural flight has increased the share of population in the urban area. This social and economic context makes the research studies in this segment more attractive (Barki and Parente, 2010; Prahalad, 2011; Teodósio and Comini, 2012). In a market perspective, this paper seeks to provide information about knowledge of innovation in low-income market business guidelines for product development, pricing, distribuition and promotion. This knowledge will provide competitive advantage for companies to its competitors, both in manufacturing companies in product development as in companies in the retail distribution and sale of products, mainly in emergent markets (Barki and Parente, 2010; Barki *et al*., 2013).

Considering these theoretical and market premises, the purpose of this paper is to investigate the interaction between the symbolic production and the cultural reproduction of consumers in the low-income context, affecting attitudes towards the adoption of innovation (early vs. late), which consequently influences the purchase of the innovation attribute acquired (radical vs. incremental). For that, the home appliance market, represented by household goods such as refrigerator, stove, washing machine and microwave, was chosen for this research. No studies were found involving these three elements: culture and consumption, innovation and low income. Thus, this study aims to fill this theoretical-empirical gap.

This study seeks to contribute academically in two ways. Firstly, the use of quantitative methods in studies involving culture and consumption, which are not very conventional. In-depth interviews, group interviews and ethnography are the most common qualitative techniques to study such phenomena. Attempting to involve elements produced symbolically and reproduced culturally in a structural equation modeling is a way to seek the interaction between theoretical content and research method, which apparently do not interact, and in this way we intend to achieve academic progress in the area. Secondly, with regard to innovation, the theoretical contribution refers to the study of innovation in the low-income market. The term 'innovation' is directly associated with advancement, technology and modernity. However, these elements are not directly found in the concept of innovation for the low income segment. Therefore, it was possible to study concepts of innovation and identify them in the low-income market, theoretically contributing to the academic advancement.

Thus, in addition to this introductory contextualization, this paper includes a review of the literature that underlies the theoretical framework of symbolic production and cultural reproduction; adoption of innovation and intensity of innovation, with the presentation of the corresponding research hypotheses. Subsequently, the characteristics of the methodological procedures are presented, including a survey

for collecting data and the structural equation modeling as treatment and analysis of the research. Then, the results and verification of the hypotheses are presented and discussed in two distinct sections. Finally, the final comments conclude this paper including appropriate considerations and suggestions for future research.

THEORETICAL BACKGROUND

SYMBOLIC PRODUCTION

Symbolic production can be perceived through symbolic articulations, which express meanings of decision in interpersonal and inter-organizational relationships between peers and within hierarchical structures in society and in the market (McCracken, 1986, 1990). In other words, symbolic articulations are not direct representations of reality, they are symbolizations of how individuals understand themselves and relate within a culturally constituted society (Trondman *et al.*, 2011), these aspects influence the way people buy embedded in society.

Thus, the material forces of production alone do not determine social dynamics, because they would be articulated to a cultural order (Sahlins, 1976). It is the relationship between cultural context and the material values of production that allows construction of the meanings of uses for the products and services on the market. These phenomena can be understood symbolically from within the social context of the practice of consumption (Wattanasuwan, 2005). Thus, goods are elements that can represent all these symbols in consumer relations. Goods are a way to shape culture and allow people to visually distinguish cultural categories. Thus, the innovative approach of persons may vary from early and late, depending on these cultural attributes.

The symbolic meaning given to products also has the function of delimiting some behavior involving consumption (McCracken, 1986; Banister and Hogg, 2004; Pettigrew, 2006). The anthropological notes on symbolic meanings are related to the recent literature on consumer behavior because consumers share meanings in products that reflect their cultural values. The symbolic use of the products lies in the consumer's ability to decode the meanings of the products and assign their own values to the identity sought to them (Belk, 1988, 2005; Tsai, 2005; Trondman *et al.*, 2011). Therefore, symbolic production can be considered an antecedent to the adoption of innovation.

CULTURAL REPRODUCTION

Considering that the symbolic production of consumer goods is configured as the production of cultural representations in the market and society, the meanings attributed to consumer goods can be culturally reproduced by individuals, groups and organizations. Therefore, it is appropriate to define culture from the perspective of consumption. Culture is an ongoing process of construction, deconstruction and reconstruction of meanings, that is, it has the connotation of a continuous cycle of "re-production", hence, cultural reproduction (Jenks, 1993; Sahlins, 1976). Consumption based on culture is symbolic representations that form a set of beliefs and values affecting the existence and social behavior of individuals (Wattanasuwan, 2005; Trondman *et al.*, 2011). Thus, culture is the formation of the relations of human actions, understood as symbolic articulations that produce symbolic meanings constructed collectively in society and culturally reproduced in the market (Tsai, 2005; Cross and Street, 2009), consequently affecting the level of innovation adoption.

Thus, cultural reproduction is expressed through the engagement and interaction of individuals and organizations, in society and in the market. This engagement is represented by consumption, based on representations of physical and symbolic aspects which society and the market reproduce according to their cultural logic (Douglas and Isherwood, 1996; Trondman *et al.*, 2011). Through these representations and cultural reproductions, acquisitions indicate the opinions of individuals and organizations (Belk, 2005; Tsai, 2005). Because in today's world, consumer goods represent what people have, do and are (Belk, 1988).

Jenks (1993) suggests that cultural reproduction refers to the quality emerging from the experience of everyday life, through interpretations, or interpretations of interpretations. Thus, cultural reproduction enables the process of continuous change, which represents continuity. Bringing this concept to the Marketing field, specifically with respect to the task of communication, it is possible to note that advertising firms work cultural content directly into their campaigns, with the intention of transforming non-economic actions into economic actions (Slater, 1993). As a result, the reproductions of symbolic constructions of social groups become materialized in consumer relations (Sahlins, 1976; McCracken, 1986, 1990; Douglas and Isherwood, 1996), being antecedent to the adoption of innovation.

INNOVATION ADOPTION

Since this is a study focused on the low-income market, the meaning of innovation transcends the connotation of technological determinism and includes relations with social constructionism. This is where the social character of innovation differs most from the perspective of technological determinism, because innovation with social character assumes a certain degree of relativism. The social validity of innovation does not involve only social aspects, but also cultural, human, political and organizational, turning away from technological determinism and approaching multi and interdisciplinary characteristics (Prajogo and Amhed, 2006; Anderson and Billou, 2007; Nakata and Weidner, 2012). Therefore, a phenomenon may be considered as innovation in a region, environment or organization but may not be considered as innovation in other places. Thus, the concept of innovation relevant to products for high-income consumers is different from the concept of

innovation in products for low-income consumers, further reinforcing the variability of this concept (Anderson and Markides, 2007; Varadarajan, 2009; Prahalad, 2011; Viswanathan and Sridharan, 2012). Therefore, adoption and dissemination should follow the concept of innovation in this socio-cultural context (Slowikowski and Jarrtt, 1997; Prahalad, 2011; Nakata and Weidner, 2012).

Creation of innovation is shown by Rogers (2003) in a 6-step process, which is not essentially sequential and does not necessarily need to contain all the steps proposed. However, these six steps are arranged in a logical and plausible procedural scheme: Recognition of the problem, Research, Development, Commercialization, Dissemination and Adoption and Consequences. The fifth step, specifically, is of concern to this session because it involves the adoption of innovation. Innovation is disseminated based on the characteristics of consumers, product attributes, social context and the marketing environment. Therefore, dissemination can be defined as the process in which innovation is communicated through certain channels over time among members of the social system (Rogers, 2003; Antioco and Kleijnen, 2010; Nakata and Weidner, 2012; Viswanathan *et al*., 2014). The communication channels of innovation are the processes by which the participants create and share information with the other party to reach a mutual understanding, which are not necessarily those of the media.

It is also worthy being aware of the five categories of adopters of innovation: innovators, early adopters, early majority, late majority and laggards. Among the factors that may drive the adoption of innovation among consumers are the respect among peers and the influences of opinion leaders in the social environment (Rogers, 2003; Antioco and Kleijnen, 2010; Nakata and Weidner, 2012), as well as the symbolic production and cultural reproduction that the individual performs within society (Tsai, 2005; Wattanasuwan, 2005). Finally, the rate of innovation, which is defined by the relative speed with which innovation is adopted by the members of the social system. Precisely because this speed is relative, it is necessary to know what the social system in the related context is. Finally, the innovation adoption affects the innovation intensity chosen, there is a dependency relationship between these two constructs.

INNOVATION INTENSITY

The meaning of innovation, as well as its intensity, is directly related to the way of measuring innovation, which measures how new the innovation is. In the product or service, it is related to the user of innovation, which may be the organizational or end consumer of the chain. Therefore, innovation has a close connection with the Marketing area in the organizations, within the areas of product development and research and development (Levitt, 1983; Prahalad, 2011; Viswanathan and Sridharan, 2012).

With regard to intensity, innovation is customarily classified into incremental and radical. Radical innovation is a product, process or organization that presents performance features, unprecedented or already known, that promote significant improvements in performance or cost (Lee and Na, 1994; Leifer *et al*., 2001; Im *et al*., 2003). Radical innovations transform the relationship between consumers and organizations, restructure the economic aspects of the market, destabilize existing markets and gives rise to a category of completely new products (Im *et al*., 2003).

At the other extreme is incremental innovation, which includes modifications, refinement, simplification and consolidation of the improvement of products, processes and existing organizations (Abdul, 1994; Rai *et al*., 2013). Incremental innovations represent low intensity of rupture with the existing practices and activities of an organization. Levitt (1983) conceptualizes as innovative imitation the one that has the incremental innovation characteristics, that is, the adaptations that make a difference to the product, process and organization, but that are not radical innovations. The concept of incremental innovation is related to the concept of continuity, in other words, the incremental innovation may occur gradually and periodically, with long-term purpose (Abdul, 1994; Lee and Na, 1994; Leifer *et al*., 2001; Viswanathan *et al*., 2010). Considering that a radical innovation occurs and creatively destroys a product, process, organization or market, the incremental innovation gives continuity to the concept initially inserted by radical innovation, and therefore, incremental innovation occurs with greater frequency and lower impact than radical innovation. Thus, one can consider that the innovation intensity (newness) is arranged in a continuum where the extremes consist of incremental and radical innovation.

CONCEPTUAL MODEL AND HYPOTHESES

Based on the review of literature and theoretical framework, it was possible to build a conceptual model. The models are an attempt to represent and explain how the phenomena occur and behave in reality, and the scientific research is responsible for verifying whether the models actually reproduce the reality. The conceptual model can be seen in Figure 1, which outlines the model according to the theory studied. Thus, the method chosen to verify this model is that of structural equation modeling (Churchill, 1979; Bagozzi, 2010; Byrne, 2010).

Whereas the symbolic production is represented by symbolic means and articulations that express meanings in the interpersonal and inter-organizational relationships (McCracken, 1986; McCracken, 1990; Sahlins, 1976; Cross and Street, 2009), this construct, therefore, positively affects the consumer's adoption of innovation, both the early (H1a) and the late adoption (H1b). When the individual produces symbolically itself it collects information and reflects on its own ability to adoption and use of innovation, making this process be improved. Moreover, the ability of the early adopter is greater

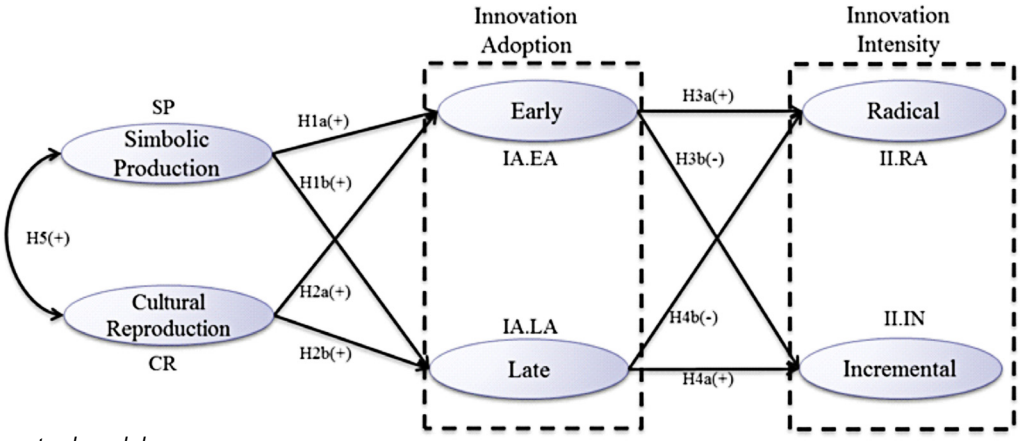

Figure 1. *Conceptual model.*

than late adopter in accept innovations (Nakata and Weidner, 2012). So, considering the need for promoting and representing itself in society through consumption, an additional hypothesis is that if H1a and H1b are confirmed, the coefficient of SP➔IA.EA is larger than the coefficient SP➔IA.LA (H1c). Therefore:

> **H1:** The elements of symbolic production positively affect the early adoption of innovation (**a**) and the late adoption of innovation (**b**) being the early adoption stronger than the late adoption (**c**).

Regarding cultural reproduction, the ongoing process of construction, deconstruction and reconstruction of culture is a cyclical movement that is in the market and in society, influenced by a set of symbols, beliefs and values that affect the existence and social behavior of individuals (Sahlins, 1976; Douglas and Isherwood, 1996; Cross and Street, 2009). This construct, therefore, also positively affects the consumer's adoption of innovation, both the early adoption (H2a) and the late adoption (H2b). When the individual reproduce culturally to other people and to society, it practices and stimulates its role of disseminator of innovation, which characterizes like one adopter, early or late. Moreover, the ability of the early adopter is greater than the late adopter in accepting innovations (Nakata and Weidner, 2012). Considering the need to promote and represent itself within society through consumption, an additional hypothesis is that if H2a and H2b are confirmed, the coefficient CR➔IA.EA is larger than the coefficient CR➔IA.LA (H2c). Therefore:

> **H2**: The elements of cultural reproduction positively affect early adoption of innovation (**a**) and late adoption of innovation (**b**), in that early adoption is stronger than late adoption (**c**).

Based on the literature on innovation, with regard to the early adopters of innovation, it is expected that the intensity thereof will be radical (H3a) and that the relationship with the incremental intensity will be negative (H3b), since consumers who buy innovative products initially seek radical innovations in the market (Abdul, 1994; Antioco and Kleijnen, 2010; Nakata and Weidner, 2012). Likewise, with respect to late adopters of innovation, it is expected that the intensity thereof will be incremental (H4a) and the relationship with radical intensity will be negative (H4B) since consumers who buy innovative products late already buy incremental innovations, with adaptations and adjustments in relation to those launched in the market a priori (Karahanna *et al.*, 1999; Nakata and Weidner, 2012; Viswanathan and Sridharan, 2012). Therefore:

> **H3:** Early adopters have a positive relationship with the radical intensity of innovations (**a**) and negative relationship with the incremental intensity of innovations (**b**).
> **H4:** Late adopters have a positive relationship with the incremental intensity of innovations (**a**) and negative relationship with the radical intensity of innovations (**b**).

Finally, one last research hypothesis to be verified involves a model correlation between symbolic production and cultural reproduction (Sahlins, 1976). Being a cyclical and continuous phenomenon, it is not possible to determine which is the antecedent and which is the consequent for these two concepts (Douglas and Isherwood, 1996). They are simultaneously occurring representations of reality (Jenks, 1993). While symbols in society and the market are represented by means of articulations and representations between individuals and organizations, there is an ongoing process of cultural construction, deconstruction and reconstruction (Douglas and Isherwood, 1996; Trondman *et al.*, 2011). Then the symbolic production and cultural reproduction are positively correlated (rival model). Therefore, we expect to find a significant result for the curved arrow in Figure 1 (H5 is only a rival model).

> **H5:** There are statistically significant and positive correlation between the constructs symbolic production and cultural reproduction.

METHOD

We applied 390 questionnaires in 6 points of consumers' convergence in the surveyed city where there was a large concentration of retail stores, metro/bus stops, banks and other elements that characterized the area as a point of concentration and circulation of people. Data collection was in a city with about 400,000 inhabitants in southern Brazil. In addition, these spots were established based on the consumers incomes, since the study focuses on low-income.

The factor used to define the sample was an annual household gross income between US$3,700.00 and US$13,000.00. People with income lower than US$ 3,700.00, belonging to class E were not interviewed as their buying needs are mainly limited to home and food. The sample comprised 32.8% men and 67.2% women; 41.5% elementary school, 46.7% high school and 11.8% higher education; 56.1% class C1 (US$3,700.00 – US$6,500.00), 29.5% class C2 (US$6,500.00 – US$9,800.00) and 14.5% class D (US$9,800.00 – US$13,000.00). The income criteria established for this paper is Critério Brasil of ABEP (Associação Brasileira de Empresas de Pesquisa).

To build the questionnaire we rely on the literature review and the results of two focus groups conducted in previous research by the same authors, which also involved investigation of the phenomenon on symbolic production, cultural reproduction, adoption of innovation and intensity of innovation. Since there is no validated scale for the constructs worked in the research, the scale items were made based on this previous step.

The language, size, order and approach of the questions were thoroughly planned, since collecting information from low-income consumers is more difficult, sensitive and complex, as they have lower levels of education and tend to read less. Thus, the questionnaires were applied on the street in a non-self-administered way (form), that is, all questions were stated to the respondents, to ensure greater data reliability.

This option, despite requiring more time and effort than sending the questionnaires online, allows greater control over the sample, seeking to reduce random error, and allows greater reliability of data collected. On the other hand, because it involves greater financial efforts, time and especially complexity of administration for each questionnaire, we sought to reduce the number of questions to achieve a larger number of valid questionnaires, as the survey was conducted on the street. Thus, we conducted three pre-tests until we came up with a suitable questionnaire. However, the approach on the street has limitations: the respondents are usually in a rush, interference of cars and motorcycles and the excitement of the outdoor environment. Therefore, the pre-tests were used to reduce the number of questions in the questionnaire. This low number of variables hindered some analyses, given the low values of Cronbach's alpha, average variance extracted (AVE) and composite reliability. The statistical tests of validity and reliability will be presented later, along with the research results.

As for the products chosen to comprise the survey, we chose refrigerators, washing machines, stoves and microwaves. These products are considered essential home appliances, being present in the surveys conducted by the IBGE (Brazilian Institute of Geography and Statistics). These products were also chosen for having more than 10 different brands in the market, because the more competitive the market, the greater the likelihood for developing innovations (Levitt, 1983), which is one of the main subjects of the study.

RESULTS

Before starting the data analysis, whose processing was done in AMOS (covariance based data), it is important to check the parameters of the measurement model with respect to the validity and reliability. First, we analyze Cronbach's alpha coefficients, the average variance extracted (AVE) and the composite reliability. In order to create a model with the most appropriate adjustments and indexes with the greatest parsimony, 5 rounds of purification were necessary to conclude that model 4 has better adjustment, given the values of $\chi 2$ / DF and RMSEA (Maruyama, 1997). For model purification, it was considered the items loadings, the composite reliability and the AVE of each construct. Table 1 shows these parameters for each purification.

The process of modeling in this study can be considered as being accurate for several reasons. To improve the indexes of the constructs in each purification step, the following criteria were applied: First, when the P value was insignificant, the variable was removed from the model. Second, if the P value was significant, but the coefficient of β was less than 0.7 within the construct, the variable was also removed. Third, the variables removed from the model were compared with their respective factor loadings per construct, effectively resulting in the removal of the lowest factor loadings. Not all constructs indicated desirable rates for Cronbach's alpha, for composite reliability and for variance extracted, but, for the accuracy of the processing, these indexes are acceptable. All these procedures were necessary because, despite having an adequated sample, the number of variables per construct was low, given the difficulties in the field research.

Improvements to the parameters can be seen after each purification, however, from the fourth to the fifth purification, these improvements are no longer as representative, and some important parameters worsen, such as PNFI, RMSEA and χ^2/ DF. Despite not presenting all the parameters of adjustments and parsimony among the desirable rates, in view of the accuracy of the model and method of analysis, the indexes are satisfactory.

Continuing the analysis of the results, Table 2 shows the discriminant validity between the constructs. The values in the cells are the correlations between the constructs squared. According to Fornell and Larcker (1981), in order to achieve discriminant validity, the quadratic correlation between the

Table 1. *Parameters of the measurement models.*

Alpha	1	2	3	4	5	Models	1	2	3	4	5
SP	0.444	0.498	0.734	-	-	PNFI	0.590	0.638	0.634	0.635	0.613
CR	0.569	0.585	0.604	0.571	0.641	CFI	0.768	0.871	0.900	0.932	0.940
II.IN	0.359	0.433	-	-	-	GFI	0.893	0.930	0.941	0.953	0.958
II.RA	0.774	0.809	-	-	-	AGFI	0.864	0.900	0.909	0.924	0.926
IA.EA	0.444	0.604	-	-	-	NFI	0.681	0.806	0.849	0.884	0.899
IA.LA	0.545	0.594	-	-	-	IFI	0.773	0.874	0.902	0.933	0.941
CR	**1**	**2**	**3**	**4**	**5**	TLI	0.732	0.837	0.866	0.905	0.912
SP	0.50	0.61	0.74	0.74	0.74	DF	200	95	68	56	45
CR	0.55	0.58	0.61	0.61	0.65	χ^2	536.9	236.9	172.6	123.0	101.4
II.IN	0.37	0.45	0.45	0.45	0.45	χ^2/DF	2.685	2.495	2.539	2.197	2.254
II.RA	0.79	0.81	0.81	0.81	0.81	RMSEA	0.066	0.062	0.063	0.055	0.057
IA.EA	0.49	0.57	0.58	0.58	0.57	(a) Alpha: Cronbach's alpha coefficient (empty cells mean that the construct had only 2 variables)					
IA.LA	0.55	0.60	0.59	0.59	0.59	(b) CR: Composite Reliability					
AVE	**1**	**2**	**3**	**4**	**5**	(c) AVE: Variance Extracted					
SP	0.30	0.40	0.59	0.59	0.59	(d) Satisfactory indexes greater than 0.9 (PNFI, CFI, GFI, AGFI, NFI, IFI, TLI).					
CR	0.20	0.24	0.29	0.36	0.49	(e) χ^2: Lowest possible					
II.IN	0.20	0.29	0.29	0.29	0.29	(f) χ^2/DF: lower than 3					
II.RA	0.56	0.68	0.68	0.68	0.68	(g) RMSEA: lower than 0.08					
IA.EA	0.29	0.40	0.41	0.41	0.41	(h) Estimation Method: Maximum Likelihood					
IA.LA	0.30	0.44	0.43	0.43	0.43						

constructs has to be lower than the variance extracted, which is arranged diagonally across the table.

Thus, according to Table 2, there is no discriminant validity between the constructs Late Adoption of Innovation and Incremental Intensity of Innovation. Theoretically, this is not a problem, it is possible to infer that consumers who obtain innovations at a later time tend to chose for incremental innovations, in other words, these consumers are more traditional, do not like to take risks and expect others to buy the innovation to make an evaluation with more information about the new product (Simanis and Hart, 2009; Prahalad, 2011; Antioco and Kleijnen, 2010; Nakata and Weidner, 2012). Still, this positive relationship between the two constructs is a hypothesis of the research (H4a). Moreover, the pricing is also crucial to the purchase decision of low-income consumers in relation with innovation. Given that radical (disruptive) innovations adhere to the skimming price strategy, incremental innovations adhere to penetration pricing strategy (Prahalad, 2005). Table 3 shows the coefficients between the constructs, as well as the result of the hypotheses confirmation.

According to Table 3, it can be seen that some hypotheses have been confirmed, others have not been confirmed, and while two of them have not been fully confirmed, they do indicate a trend towards the hypothesis proposed, so we considered them as partial confirmation. The results of each hypothesis, as well as their parameters, are discussed in more detail below.

Table 2. *Discriminant validity.*

	SP	CR	II.IN	II.RA	IA.EA	IA.LA
SP	**0.30**					
CR	0.07	**0.20**				
II.IN	0.00	0.00	**0.20**			
II.RA	0.04	0.05	0.10	**0.56**		
IA.EA	0.11	0.13	0.03	0.44	**0.29**	
IA.LA	0.00	0.01	0.36	0.10	0.00	**0.30**

DISCUSSION

According to Table 3, it is possible to notice that H1a is confirmed (p<.001), but H1b is not confirmed. Thus, it is concluded that the attributes produced symbolically in society and in the market influence the consumer to be early adopters, that is, considering the interpersonal and inter-organizational

Table 3. *Hypotheses verification.*

Hypothesis	Structural Relationship			b	β	Standard error	p	Result
H1a	IA.EA	←	SP	0.277	0.269	0.070	.000***	Confirmed
H1b	IA.LA	←	SP	0.031	0.041	0.052	.547	Not confirmed
H1c	β of H1a greater than β of H1b							Confirmed
H2a	IA.EA	←	CR	0.319	0.315	0.079	.000***	Confirmed
H2b	IA.LA	←	CR	0.066	0.087	0.058	.262	Not confirmed
H2c	β of H2a greater than β of H2b							Confirmed
H3a	II.RA	←	AD.IN	0.859	0.681	0.149	.000***	Confirmed
H3b	II.IN	←	AD.IN	-0.126	-0.192	0.071	.075*	Confirmed
H4a	II.IN	←	AD.TA	0.533	0.602	0.137	.000***	Confirmed
H4b	II.RA	←	AD.TA	-0.581	-0.342	0.128	.000***	Confirmed
H5	Significant correlation between SP and CR (r = 0.243)						.000***	Confirmed

Notes: (***) p<.01; (**) p<.05; (*) p<.10.

symbolic articulations, it makes more sense that consumers express and position themselves before society as innovative consumers, who are aware of the novelty and willing to take the risk of purchasing a new product early (Cross and Street, 2009; Antioco and Kleijnen, 2010; Nakata and Weidner, 2012). Moreover, by observing the values for β is possible to deduct that the relation of SP➔IA.EA is significant and the relation of SP➔IA.LA is not significant, confirming H1c.

The same analysis can be performed for the three subsequent hypotheses, once H2a is confirmed (p<.001), but H2b is not confirmed. Thus, it is concluded that the attributes culturally reproduced in society and in the market influence the consumer to be an early adopter in view of the process of cultural construction, deconstruction and reconstruction, in other words, the existence and social behavior of individuals make them choose to be a bold consumer, willing to take risks in the acquisition of new products (Cross and Street, 2009; Anderson and Billou, 2007; Varadarajan, 2009; Prahalad, 2011).

On the other hand, this influence does not occur for the late adoption, this cultural context does not affect the process of late adoption. However, an analysis conducted by other cultural variables may better explain how the cultural reproduction affects the late adoption, since the cultural aspects are very influential on the buying behavior of people (Prahalad, 2011; Nakata and Weidner, 2012). Moreover, by observing the values for β is possible to deduct that the relation of CR➔IA.EA is significant and the relation of CR➔IA.LA is not significant, confirming H2c.

Analyzing the hypotheses related only among innovation constructs, it is possible to note that all of them are confirmed. First, H3a is confirmed, indicating that the early adopters opt for radical innovations, that is, those who have a higher rate of innovation, sophistication and technology. This sophistication in home appliances is often reflected in bold design and finishing with details of modernities. Next, H3b is also confirmed, because in addition to being significant, the value of β is negative, that is, early adopters do not opt for incremental innovations, which have few innovations and only include adaptations to what already existed as a differential in the product (Anderson and Markides, 2007; Nakata and Weidner, 2012; Viswanathan and Sridharan, 2012).

By analyzing the hypotheses related to late adoption, it is also possible to note the confirmation of H4a, that is, late adopters prefer incremental innovations, as they are more cautious and insecure when it comes to innovation. It is not by chance that the value of β for H4a is the highest value found in the measurement model, since, according to the proposal of Fornell and Larcker (1981) about validity, there was no validity between these two constructs, but these are issues that theoretically make sense in being well connected. Also, H4b is also confirmed, since late adopters do not buy radical innovations (Nakata and Weidner, 2012). This is easily justified, because if the consumers choose to buy innovation later, they show signs of caution and traditionalism, in addition, when consumers buy the innovative product in question, this innovation is no longer radical, since the skimming strategy period has elapsed, innovative products no longer have so much innovation.

Finally, one last research hypothesis to be verified involved a model that competes with the initial model. The rival model considered the existence of a covariance between the constructs symbolic production and cultural reproduction, for being a cyclical and continuous phenomenon, that is, it is not

possible to determine which one is the antecedent and the consequent for these two concepts (Cross and Street, 2009). They are representations of the reality that occur simultaneously. In other words, while symbols in society and in the market are represented by means of articulations and representations between individuals and organizations, the ongoing process of cultural construction, deconstruction and reconstruction occurs at the same time.

By verifying H5, we found the statistically significant correlation between the construct's symbolic production and cultural reproduction ($p < .000$), so this hypothesis was also confirmed. Regarding the fit indices of the new model (with correlations), it was found that some parameters had their values improved and others did not, however, these differences were very sensitive (PNFI = 0.637; CFI = 0.919; GFI = 0.948; AGFI = 0.917; NFI = 0.871; IFI = 0.921; TLI = 0.889; DF = 57; χ^2 = 136.4; χ^2/DF = 2.393; RMSEA = 0.060).

Both attributes of symbolic production and the attributes of cultural reproduction positively affect the attitude of early adoption of innovation by low-income consumers of home appliances. With regard to late adoption, neither of these two constructs indicated statistically significant indexes. On the other hand, constructs involving innovation had all indexes statistically significant, confirming the hypotheses between the attitude in the adoption of innovation with the buying behavior in relation to the attribute intensity of innovation.

CONCLUSIONS

The purpose of this paper was to investigate the interaction between the symbolic production and cultural reproduction of consumers in the low-income context, affecting the attitude towards the adoption of innovation (early vs. late), which consequently influences the purchase regarding the attribute of the innovation acquired (radical vs. incremental). By using the structural equation modeling, it was possible to achieve the objective of the study, confirming the hypotheses developed based on the theory used. In addition, this paper sought to fill an academic gap related to the study of the concepts of culture and consumption, innovation and low-income consumers. This paper contributes by filling this gap, especially regarding the issue on how to try to make low-income consumers adopt innovations in the market earlier, through cultural and symbolic elements. This contribution can provide support for decisions in the market both for retailers that sell home appliances to the end consumer and for manufacturers that develop and produce these products (Viswanathan and Sridharan, 2012).

Among the 11 research hypotheses proposed, 9 were confirmed and 2 were not. Whereas the model was fairly accurate, given the choice of the software used to perform the structural equation modeling, as well as having rigid criteria for the adjustment and purification of the model, it is possible to conclude with the parameters of parsimony that the structural model and the measurement model are adequate. In other words, what has been theoretically proposed was empirically observed in the study.

The article contributes with an empirical research on symbolic production and cultural reproduction using the Structural Equation Modeling. Considering that this procedure is not common in this literature, we seek to encourage more academic research with this profile. Moreover, the main contribution of the paper is to demonstrate the relationship between symbolic production and cultural reproduction in relation to innovation adoption and consequently relative to the innovation intensity within the low-income market. The confirmations of hypotheses show that the process of construction, deconstruction and reconstruction of symbolic meanings positively influences the innovation construct.

The managerial implications of this paper points out that it is necessary to understand the cultural and symbolic relationships of low-income consumers that affect the innovation consumption. Product development needs to focus more on simple products that are easy to handle, usually incremental innovations, the price needs to be affordable and offered in installments along with the adequacy of the products creation, prices may be reduced. The distribution must be broad and arrive in areas of difficult access, where most of the low-income population lives and promotion also needs to be embracing, easy to understand with high involvement. Moreover, not only private companies should be aware of the characteristics of innovation in low-income market, but also social business, since its practice has grown worldwide and is fundamental to the human development of the population in emerging markets (Comini *et al.*, 2012).

As the audience surveyed was the low-income population, a further research comparing the results with a high-income audience would be relevant, since the results found in this study may be similar when performed with a high-income audience and for not having discrimination in attitude and behavior between these two audiences for the variables studied.

Unfortunately, there is no validated scale for the symbolic production and cultural reproduction constructs. The items used were built with the basis of the literature review and results of two focus groups conducted in previous research. The fact that the scales are not validated is a limitation of the article.

Conducting a pilot study with a larger number of variables and removing those that have low commonality within the construct or low factor loadings may be a way to find few variables that better measure the concept and thus improve the parameters of adjustment of the model as well as the coefficients of β and the levels of significance. Finally, experimental studies that seek to study stimuli that encourage low-income consumers to adopt innovations early rather than late, as well as choose radical innovation rather than incremental innovations, may contribute greatly to the academic field as well as to companies working in the low-income market.

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Appendix 1. *Symbolic Production.*

- I take into consideration the opinion of my friends and relatives when buying an appliance. (dropped)
- When I ask questions to assistants and sellers, I am fine with the information they give me. (dropped)
- I am used to telling my friends and relatives to buy appliances in certain stores.
- I am used to telling my friends and relatives to buy appliances of certain brands.

Cultural Reproduction
- The appliances assist in the quality of life of my family. (dropped)
- I am always attentive to the advertisements and commercials of the stores that sell home appliances.
- I am always attentive to the advertisements and commercial from companies that manufacture home appliances, the brands. (dropped)
- The appliances help me save time. (dropped)
- I always buy home appliances at the same store.
- I always buy home appliances of the same brand.

Intensity of Innovation (Radical)
- I usually buy home appliances with little technology, that is, the very basic ones. (dropped)
- When I buy home appliances, I realize that the technology they have are NOT the latest, cutting edge, and that there are products with more advanced technologies.
- With regard to home appliances, the real innovation is for those who have a lot of money, not for this new Brazilian middle class.

Intensity of Innovation (Incremental)
- When I buy home appliances, I realize that the technology they have are the latest.
- I always buy home appliances with the latest technology. (dropped)
- When it comes to home appliances, I always buy products with the latest novelties and full of innovation.

Adoption of Innovation (Early)
- In general, I am one of the first among my friends and relatives to purchase innovative home appliances.
- Usually, I manage to understand well the novelties in the new home appliances without the help of others. (dropped)
- I like buying new home appliances before others.

Adoption of Innovation (Late)
- In general, I am one of the last among my friends and relatives to purchase an innovative home appliance.
- I have difficulty to understand so much technology that is included in the home appliances. (dropped)
- I prefer to buy home appliances after most people have already bought them.