

CO-CREATION PROCESSES AND ENGAGEMENT: AN EMPIRICAL APPROACH

<Value Co-creation and changing role of suppliers and customers>

ABSTRACT

Purpose: To explore the role of co-creation of value processes in consumer purchase behavior especially focusing on engagement generation. Taking as the starting point the Service-Dominant Logic propositions on value, a conceptual framework is proposed, positing coproduction and interaction as key drivers in order to understand customer perceived value co-creation and the subsequent engagement perception.

Methodology/approach: Based on the conceptual model proposed, a laboratory experiment was carried out simulating an online purchase scenario. Multivariate analysis of variance (MANOVA) was used to examine the data gathered in the experiments.

Findings: The study highlights the key role adopted by the co-creation of value phenomenon in order to understand value configuration in the marketplace and customer behavior. Coproduction and interaction are confirmed as main drivers of perceived value co-creation and perceived engagement during the purchase experience.

Research implications: This study explains how co-creation of value is perceived from interactions and coproduction in online environments as well as the importance of this perception to understand value configuration from the customer perspective. It also offers new insights to further understand and analyze the engagement and value co-creation phenomena.

Practical implications: This work offers an integrative perspective to manage customer participation in value co-creation processes that fosters engagement and differentiates firm's offering from competitors.

Originality/value: Differently from previous theoretical works, this research offers empirical support to existing discussion related to the co-creation of value issue. The study approaches the co-creation of value topic from the customer perspective in order to understand how this co-creation of value is perceived and how it affects consumer behavior and the development of engagement with the firm.

Keywords: Co-creation of Value, Engagement, Service-Dominant Logic, Interaction, Coproduction, E-commerce.

1. Introduction

At the present time, it is generally accepted the important role of value configuration in firm-customer relationships. Different authors have highlighted the experiential nature of value and its configuration as value in use, opposed to the previous dominant consideration of value in exchange (Holbrook, 1994; Grönroos, 2006; Vargo and Lusch, 2004).

Positioning value as determined by experience as well as the role of the customer as a value creator has important implications and challenges at the strategic level for firms. Moreover, the development of information and communication technologies (ICTs) has fostered customer empowerment through unparalleled information access and networking possibilities. ICTs present new means for firms to establish balanced relationships with their customers. Nevertheless, it also presents new risks related to the lack of control on information or processes due to the customer participation.

Consistent with this emerging landscapes, new concepts and constructs have been developed and discussed in contemporary marketing research. The co-creation of value and customer engagement constructs have recently been subjected to broad discussion as concepts that explain joint configuration of value in the marketplace and non-transactional consumer behavior. However, while these concepts have been thoroughly examined at a conceptual level, empirical research is still in its infancy. Different authors have claimed the need of empirical research that helps to clarify the conceptual significance of these constructs and also to understand the impact that they may have on consumer and organizational behavior (Bijmolt et al., 2010; Verhoef et al., 2010).

This article aims to contribute to the existing discussion about these topics offering empirical support to how co-creation of value and engagement are perceived by the customer during the purchase experience. We propose that the online environment offers unique features that foster co-creation of value and engagement generation during the purchase

experience. Building on previous literature on co-creation and engagement, we suggest that coproduction and interactions during the purchase experience bolster customer co-creation and engagement perceptions and we test this in a fictitious online purchase setting.

The paper is organized as follows. The next section reviews the literature on the co-creation of value and engagement. Section 3 describes our conceptual model and hypotheses proposed. Section 4 explains the experimental design and the empirical analyses undertaken to test our proposed hypotheses in the online environment: multivariate analysis of variance. We then discuss our results and, in the final section, we provide the conclusions and implications of our research as well as outlining some limitations and opportunities for further research.

2. Literature review

2.1. Co-creation of value

The concept of co-creation of value has taken a dominant role in late research about value configuration. Different authors have remarked the customer's active role in configuring his/her own value (Holbrook, 1994; Prahalad and Ramaswamy, 2000; Vargo and Lusch, 2004). Co-creation of value is the concept that reflects the premise that value is not created exclusively by the firm but by the interaction of different actors including the customer. This perspective on value creation challenges the idea of production as a value creation activity and consumption as a value destruction activity. In fact, different authors following a postmodernist approach to the matter have positioned both symbolic production and consumption as major areas of community participation considering consumption as a value-creating activity (Firat et al. 1993; Firat and Venkatesh 1995).

Vargo and Lusch (2004) have proposed several foundational premises about value considering it as being determined by consumption and defined as “idiosyncratic, experiential, contextual and meaning laden” (Vargo and Lusch, 2008, p.7). Different

researchers (Holbrook, 1994; Richins, 1994a, 1994b) and practitioners (Pine and Gilmore 1999) had previously acknowledged the experiential nature of value. From this point of view, as value is experiential it cannot be determined by the firm but by the customer using the product or service. Likewise, in contrast with the Goods-Dominant Logic that was founded on the value as a transactional concept (value in exchange), a new perspective emerges called the Service-Dominant Logic, which considers value in use and the customer as a co-creator of value (Vargo and Lusch 2008; Vargo, Maglio and Akaka 2008).

Prahalad and Ramaswamy (2004) define co-creation in the context of experiential marketing as “the process that allows the individual consumer to determine the design of future products and services, the marketing messages and distribution channels where the products will be available”. These authors highlight the importance of interactions as the locus of value and the importance of the personalization of the co-creation experience to determine value. Other authors have characterized the co-creation of value as an interactional concept (Vargo and Lusch, 2008), highlighting its dialogical focus and collaborative essence (Ballantyne and Varey, 2006; O’Hern and Rindfleisch, 2010).

Co-creation of value has been broadly discussed at the conceptual level, being its relationship with coproduction a critical issue. In this sense, Lusch and Vargo (2006) have defined coproduction as customer participation in the development of the core offering (product or service), considering it as a component of value co-creation. Similarly other authors have argued “due to the customers’ involvement in these interactive processes, firms and customers are co-producers of the service and co-creators of value” (Grönroos, 2006, p.324). Grönroos (2011) emphasizes the idea of production and value creation as separate processes, which are likely to get intertwined under certain conditions, normally if interactive processes are involved. Van Doorm et al. (2010) also stated that “co-creation occurs when the customer participates through spontaneous, discretionary behaviors that uniquely customize

the consumer-to-brand experience (beyond the selection of predetermined options as in coproduction)” (p. 254), highlighting significant differences between co-creation and coproduction.

Co-creation of value has been mainly explored regarding NPD strategies (Hoyer et al., 2010; O’Hern and Rindfleisch, 2010) but its role in other contexts, such as the purchase experience, is still unexplored. Furthermore, few empirical works have analyzed the co-creation of value to date.

2.2. Engagement

The concept of engagement is taking a prime role in marketing research, especially in the consumer behavior arena. Different publications, such as the special issue in *Journal of Service Research* (2010), have highlighted the role of engagement to define certain aspects of value configuration and consumer behavior.

The engagement concept has been previously developed in Organizational Behaviour, Advertising, and E-learning fields. From the perspective of Business Administration literature, engagement is related to employee’ compromise with the firm, and has been used as measure of firm’s financial results (Sacks, 2006). Different definitions regarding this approach have enhanced that behaviours that generate engagement processes in employees are shown either in a cognitive or an emotional way (Schaufeli et al., 2002; Hardaker and Fill 2005).

Engagement in the e-learning literature is conceptualized as the link between knowledge or intrinsic interest and external stimuli that promotes initial interest and desires of continuous learning (Jones, 1998). Overall, e-learning literature emphasizes the idea of engagement as a cognitive process linked to individual motivational issues as concentration, reasoning and active learning (Guthrie et al., 2004; Herrington, Oliver and Reeves, 2003).

A third perspective has been approached from advertising discipline, being defined as the strength of firm-customer relationship based on the construction of emotional and rational bonds with the brand (McEwen, 2004). Other works have conceptualised engagement using as starting point The Advertising Research Foundation's (ARF) definition (Wang, 2006): "turning on a prospect to a brand idea enhanced by the surrounding context". Regarding this approach, engagement has been defined as a mental state that implies the existence of cognitive processes, a relationship with satisfaction of consumer perceived usefulness, and the presence of an emotional relationship (Mollen and Wilson, 2009). Other authors have established direct relations between engagement and advertising effectiveness (Calder et al., 2009), brand attachment (Sprott et al., 2009) and value creation processes (Higgins and Scholer, 2006).

This last perspective has been recently expanded to the online consumer behavior context. Different works have related engagement with value configuration and non-transactional behavior (Kumar et al., 2010; Van Doorm et al., 2010; Verhoef et al., 2007). In this context, customer engagement behavior has been defined as "a customer's behavioral manifestations that have a brand or firm focus, beyond purchase, resulting from motivational drivers" (Van Doorm et al., 2010, p.254). Furthermore, the relationship between engagement and co-creation of value has been conceptually established, positing co-creation as one of the manifestations of engagement (Bijmolt et al., 2010) and thus considering that engagement encompasses customer co-creation (Van Doorm et al., 2010).

3. Model and hypotheses

Based on co-creation of value and engagement literature, we propose the model showed in figure 1. We posit as the independent variables of our model coproduction and interaction as these two aspects are, according to our literature review, key aspects to define both co-

creation of value and engagement. These two variables are also significant features in the online environment.

<<Insert figure 1 here>>

3.1. Coproduction

Coproduction as customer participation in production processes has been extensively developed in the literature (Fitzsimmons, 1985; Lovelock and Young, 1979), especially in service research (Dabholkar, 1990; Hult and Lukas, 1995; Van Raaij and Pruyn, 1998). Earlier works about coproduction have focused on the firm perspective, but recently the focus has been located on the customer perspective of coproduction processes, defined as “an explicit result of decision making by consumers reflecting their own preferences” (Etgar, 2008, p.97). Other works have explored the influence of this variable on outcome quality and satisfaction with the firm (Bendapudi and Leone, 2003). These further developments establish coproduction as an activity that fosters the personalization of the individual experience and, consequently, it is likely to have an effect on the co-creation of value during consumption or usage, which is consistent with the SDL approach.

In the online environment, coproduction has been defined as the personalization of design features, also called co-design (Piller et al., 2005; Wind and Rangaswamy, 2001). O’Hern and Rindfleisch (2010) consider co-design as one of the types of co-creation activities in the framework of new product development strategies, positing it as the best balance between improvisations and planning as well as a mean of encouraging participation within defined limits.

Hence, we define coproduction in the online setting as the customization of an offering steered by the customer. Coproduction contributes significantly to purchase experience personalization and it is especially relevant in the online environment where there is no

physical presence to enhance positive experiences and customer involvement and thus foster engagement behaviors as word-of-mouth (Libai et al., 2010).

H1: Coproduction during the purchase experience influences perceived value co-creation.

H2: Coproduction during the purchase experience influences perceived engagement.

3.2. Interaction

Interaction has been recognized as a relevant issue to understand how co-creation of value takes place. Value co-creation has been defined as an interactional process (Grönroos, 2006; Vargo and Lusch, 2006, 2008), positing interaction as the locus of customer-firm value co-creation (Prahalad and Ramaswamy, 2004). Other authors have highlighted the importance of co-creative interactions in order to have “compelling engagement experiences” (Ramaswamy, 2009) and the role of dialogue as a fundamental of co-creation of value and sustainable competitive advantage (Ballantyne and Varey, 2006). Furthermore, several authors have remarked the importance of interactions in the social configuration of value in brand communities (Muñiz and O’Guinn, 2001; Schau, Muñiz and Arnould, 2009; Edvardsson et al., 2010).

In the online environment, the concept of interaction is closely related to interactivity, understanding the latter as a socializing process. Interactivity has been widely analyzed in marketing and computer science literature and is recognized as an important issue in e-commerce (Varadarajan and Yadav, 2002). It benefits consumer decision-making, favors consumer relationship marketing, and allows greater personalized marketing strategy (Yadav and Varadarajan, 2005). Moreover, interactivity is closely linked to perceived quality (Berthon et al., 1996). Thus, it improves customers’ experiences in online interactive retailing (Childers et al., 2001; Kim and Forsythe, 2007). Interactivity increases experiential and instrumental value (Fiore et al., 2005) and its bidirectional nature influence hedonic value

creation in e-tailing (Yoo, Lee and Park, 2010). Similarly, interactivity enhances firm capabilities as well as contributes to e-business value (Zhu and Kraemer, 2005). Interactivity has also been related to engagement and telepresence in the online environment (Mollen and Wilson, 2009).

In this context, we define interaction in terms of interactivity understood as a socializing process, considering it as an important variable in co-creation processes. Interaction with other customers is a valuable source of information exchange, experience sharing and identification with others, activities that contribute to increasing participation intentions and value perceptions. Furthermore, several researchers have linked interaction to the coproduction of the offering especially in online settings, as interactions facilitate the participation of customers in shaping the offering before the purchase and, thus, co-creating value with the firm (Miceli et al., 2007; Prahalad and Ramaswamy, 2004).

Consistent with this, we propose the following hypotheses:

H3: Interaction during the purchase experience influences perceived value co-creation.

H4: Interaction during the purchase experience influences perceived engagement.

H5: The effect of coproduction on the perceived co-creation of value is stronger in the presence of interaction during the purchase experience.

H6: The effect of coproduction on the perceived engagement is stronger in the presence of interaction during the purchase experience.

4. Method

Design and Subjects

In our first study, four experimental scenarios were designed with manipulations of interaction and coproduction. The experimental design used was two-way factorial between subjects: two levels of interaction (interaction, no-interaction) and two coproduction levels

(coproduction, no-coproduction). We used a sample of 196 university students, aged between 20 and 38 (109 females).

Stimuli

In order to test our hypotheses, an online interface was designed and a purchase situation was simulated. Different online design features were selected to manipulate interaction and coproduction settings in the four experimental scenarios (McMillan and Hwang, 2002; Sicilia et al., 2005; Song, 2008), a website being designed for each scenario based on actual websites. As showed in figure 2, we used a standard model of sneaker in which subjects could select different colors to design different parts of the sneaker as our coproduction manipulation. The interaction manipulation was based on the option to share the sneaker in the website's gallery, vote the sneakers in the gallery, share comments with other users in the forum and share the created sneaker in different social networks or by mail.

<<Insert figure 2 here>>

Previous to data gathering, the scenarios were pre-tested with a convenience sample of 30 users, in order to improve the websites' design as well as to test the manipulations used and refine the perceived co-creation of value and engagement scales.

Procedure and Measurement

The experiments were carried out in the university computer labs in May 2010. Students enrolled in different marketing and management modules participated voluntarily in the experiment. At the end of the task they were rewarded with a refreshment voucher.

Each participant was randomly assigned to one of the four experimental settings. Students first answered questions related to their previous Internet surfing experience and frequency of web use. Then, participants were asked to imagine that they wanted to buy a pair of sneakers, so they visited a fictitious company website called My Favourite Sneaker. They were told to

read all the introductory instructions from the screen and an extra instruction sheet was provided. Subjects were asked to buy sneakers and perform different activities depending on the scenario assigned. After using the interface, participants were asked to complete a questionnaire. In order to check that the manipulations were adequate, the subjects were asked to rate the coproduction and interaction experienced. To measure perceived value co-creation and perceived engagement different scales were adapted (see Table 1 for Perceived Value Co-creation and Perceived Engagement scales). All the scales were seven-point Likert ones, 1 being the lowest perception. Scale development was undertaken in English using a procedure of back translation afterwards to ensure correspondence between the English scale and the translated Spanish scale, as recommended by Brislin (1980). Additionally, single index scores for the perceived value co-creation and engagement scales were computed by averaging the corresponding items.

<<Insert table 1 here>>

Results

Forty-nine participants were assigned to each experimental condition. All participants were experienced users and had bought products or services online before.

A reliability analysis for the co-creation perception and the engagement scales was conducted by calculating Cronbach's α . The value of Cronbach's α for the perceived co-value creation ($\alpha = 0.908$) and the engagement ($\alpha = 0.933$) far exceeds the recommended critical point of 0.70 (Nunnally 1978).

Manipulation Checks

In order to test the adequacy of the manipulations, independent-means t-test analyses were performed for both manipulations.

For the interaction manipulation, the means were $M_{\text{interaction}} = 5.84$ and $M_{\text{no-interaction}} = 3.57$ ($t_{194} = 10.868$, $p < .001$, $r = .61$), showing that manipulation was successful. Similarly, coproduction manipulation means were $M_{\text{coproduction}} = 5.92$ and $M_{\text{no-coproduction}} = 2.98$ ($t_{194} = 13.168$, $p < .001$, $r = .68$), showing significant different means and effect sizes of the manipulations applied in the experiment.

Hypothesis Testing

Multivariate analysis of variance analysis (MANOVA) was performed on the data. Multivariate effects of interaction (Wilks' $\lambda = .877$, $F = 13.423$, $p < .001$) and coproduction (Wilks' $\lambda = .756$, $F = 30.896$, $p < .001$) were both significant. The two-way interaction between coproduction and interaction was also significant (Wilks' $\lambda = .952$, $F = 4.848$, $p < .05$). Results of multivariate and univariate analysis are summarized in table 2.

<<Insert table 2 here>>

Follow-up univariate analyses revealed that coproduction has significant main effects on perceived value co-creation ($F_{1,192} = 61.883$, $p < .001$, $\omega^2 = .55$) and on perceived engagement ($F_{1,192} = 16.797$, $p < .001$, $\omega^2 = .24$), so both H1 and H2 are supported. Furthermore, interaction has also significant main effects on perceived value co-creation ($F_{1,192} = 15.846$, $p < .001$, $\omega^2 = .23$) and perceived engagement ($F_{1,192} = 25.135$, $p < .001$, $\omega^2 = .33$), supporting H3 and H4. In addition to that, univariate analysis revealed that, there is an interaction effect that positively affects perceived value co-creation ($F_{1,192} = 9.635$, $p < .05$, $\omega^2 = .15$) supporting H5, but there is not any interaction effect on perceived engagement, so H6 was rejected. Considering the data analyzed, we can conclude that coproduction is the strongest predictor of perceived co-creation of value ($\omega^2 = .55$), whereas for the engagement perception the strongest predictor is interaction ($\omega^2 = .33$).

Based on the above results, a post-hoc analysis was performed to compare mean differences between the four scenarios. Following Keppel (1991), Bonferroni tests were used in order to reduce the probability of type I error. Results revealed that the scenario with coproduction and interaction together reported the highest perceived co-creation scores, followed by the only coproduction scenario (MD= 1.5255, $p < .001$), while the only interaction scenario reported lower scores than any of those that have coproduction (MD= 2.3622, $p < .001$).

Regarding the engagement perception, Bonferroni tests revealed that the scenario with coproduction and interaction reported the higher perceived engagement, but followed in this case by the only interaction scenario (MD= 1.1857, $p < .001$), and the only coproduction scenario (MD= 1.3796, $p < .001$), supporting the results aforementioned that showed a greater effect of interaction on perceived engagement, compared to the coproduction effect.

Our results demonstrate the critical influence of coproduction and interactions on the co-creation of value and engagement perceptions. However, each perception is influenced differently by the two drivers considered in the study. Thus, coproduction predominantly influences perceived value co-creation, while perceived engagement is mainly determined by the interactions that take place during the experience. These results are further supported in the posthoc analysis carried out, in which the experimental scenarios are differently sorted depending on the dependent variable considered.

The interaction effects gathered on perceived value co-creation confirm that considering both independent variables together increase the perception of co-creation experienced significantly. However, the non-significant interaction effect on perceived engagement shows that the coproduction and interaction influences on engagement are un related, being most influential the interaction than the coproduction effect.

5. Conclusions, limitations and future lines.

Theoretical Implications

In this study, we have conceptualized the perceived value co-creation and engagement factors and defined its main drivers in the online environment: coproduction and interaction. We also clarify the influence of the latter variables on co-creation of value and engagement during the purchase experience. The model developed in the present work contributes to the existing discussion about value co-creation of value and engagement, demonstrating their importance on consumer purchase behavior. This work offers a conceptual framework that, in line with current academic discussions about the topic, builds upon the importance of understanding value creation on the basis of customer experiences and the critical role of coproduction and interactions in shaping consumer behavior.

With this research, we contribute to the existing discussion about this topic proposing a conceptual framework that explains how interaction and coproduction in the online environment affect customer co-creation and engagement perceptions. We also test the framework of theoretical relationships proposed, offering empirical support to our conceptualization of co-creation of value and engagement during the purchase experience.

Our results show that coproduction plays a leading role in co-creation of value processes, as it is the main influence on perceived value co-creation. On the other hand, interaction is the main driver of engagement perception. These results offer new insights to co-creation of value definition, compared to existing co-creation theoretical conceptualizations as mainly based on customer-firm interactions. While interactions are doubtlessly important in the co-creation of value, we conclude that, in the context of the online purchase scenario, coproduction has a leading role in the co-creation of value perception that is configured during the mentioned experience. Thus, coproduction during the purchase experience is a key variable to enhance customer experience and interactions foster the coproduction activity.

In addition to that, our results verify the appropriateness to consider the importance of the purchase experience in generating co-creation of value and engagement perceptions. We can conclude from our results that fostering customer participation through coproduction and interactions during the purchase experience increases perceived engagement.

Managerial Implications

This study offers three main managerial contributions.

First, it provides an integrative perspective to manage customer participation in value co-creation processes within firm's boundaries. Including coproduction and interaction tools in the online environment is recommended in order to generate co-creative environments that promote customer involvement during the purchase experience as well as further engagement behaviors in the post-purchase stages. Our study offers a better understanding about how to foster perceived value co-creation and perceived during the purchase experience, which is especially important for designing the interfaces in which it takes place. Being able to generate these perceptions is a key capability for firms as a mean to manage customer experience during the online purchase. Moreover, perceived value co-creation and perceived engagement encourage positive behaviors towards the firm, such as increased purchase intentions, WOM and referrals, that are likely to lead to repurchase behaviors and also generate better and long-lasting firm-customer relationships.

Second, we have demonstrated the importance of combining tools that facilitate interaction with the customer and between customers (e.g. blogging, virtual consumer communities, social networks) as well as others that allow the coproduction of the offering and the experience. Likewise, the firm is likely to generate meaningful relationships generating an ongoing conversation with its customers and gathering valuable information at the same time. These tools are important to the design of communication and social media strategies,

providing an enhanced customer purchase experience which leads to increase purchase intentions.

Third, including these tools in the firm's online interface is also a way to undertake customers' segmentation that helps the firm to discern profitable customers from the ones that are less profitable. Customers prone to provide new ideas and share them in the online setting generate referral value and knowledge value, which are relevant in terms of maximizing customer engagement value (Kumar et al. 2010) and measuring the real profitability of the customer for the firm. Being able to identify this kind of customers helps the firm to achieve a better management of its customer base. A consumer that provides new ideas about products and services and, moreover, shares them with the firm and other customers, is a highly engaged customer that can attract and involve other people in co-creative activities. Firms must offer outstanding platforms that provide enough freedom to undertake co-creative activities, trying to address these customers and maximize their profitability.

Limitations and Future Lines of Research

In our research, we have focused on the role of the purchase experience as a medium to foster co-creation of value and enhance customer value in use. However, more research is needed to clarify how value is configured during the use experience. One limitation of our work is that we use cross-sectional data in our empirical study, so it would be recommended to expand the study on a longitudinal basis to better address the effects of interaction and coproduction on the whole purchase experience (i.e. including the consumption stage and not only the purchase stage).

Our research might also be limited by the fact that we chose a tangible product (sneakers) to carry out the empirical study. We believe that our conceptual model can be applied to services too, as it is in line with the notion of service defined by Vargo and Lusch (2008b), which encompasses traditional distinctions between goods and services. In future research, it

would be recommended to test the differences (if any) between types of offerings with respect to perceived co-creation of value in the online environment. It would be also desirable to test in detail relationships between the co-creation of value and engagement perceptions. Empirical research into these topics is still in its infancy, so more research is needed to understand this concept and its implications more deeply.

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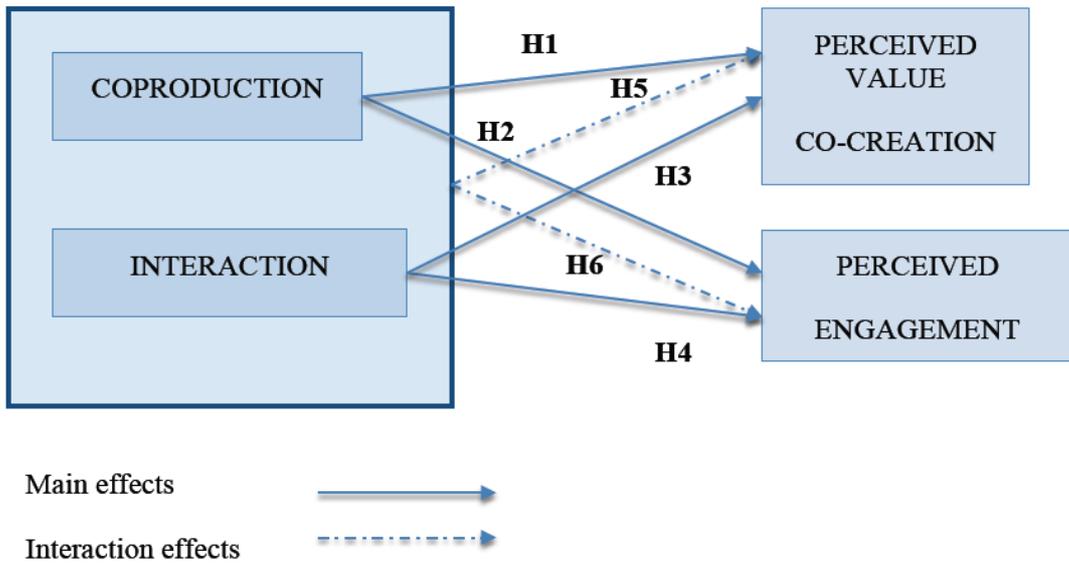


Fig. 1. Hypothesized Model

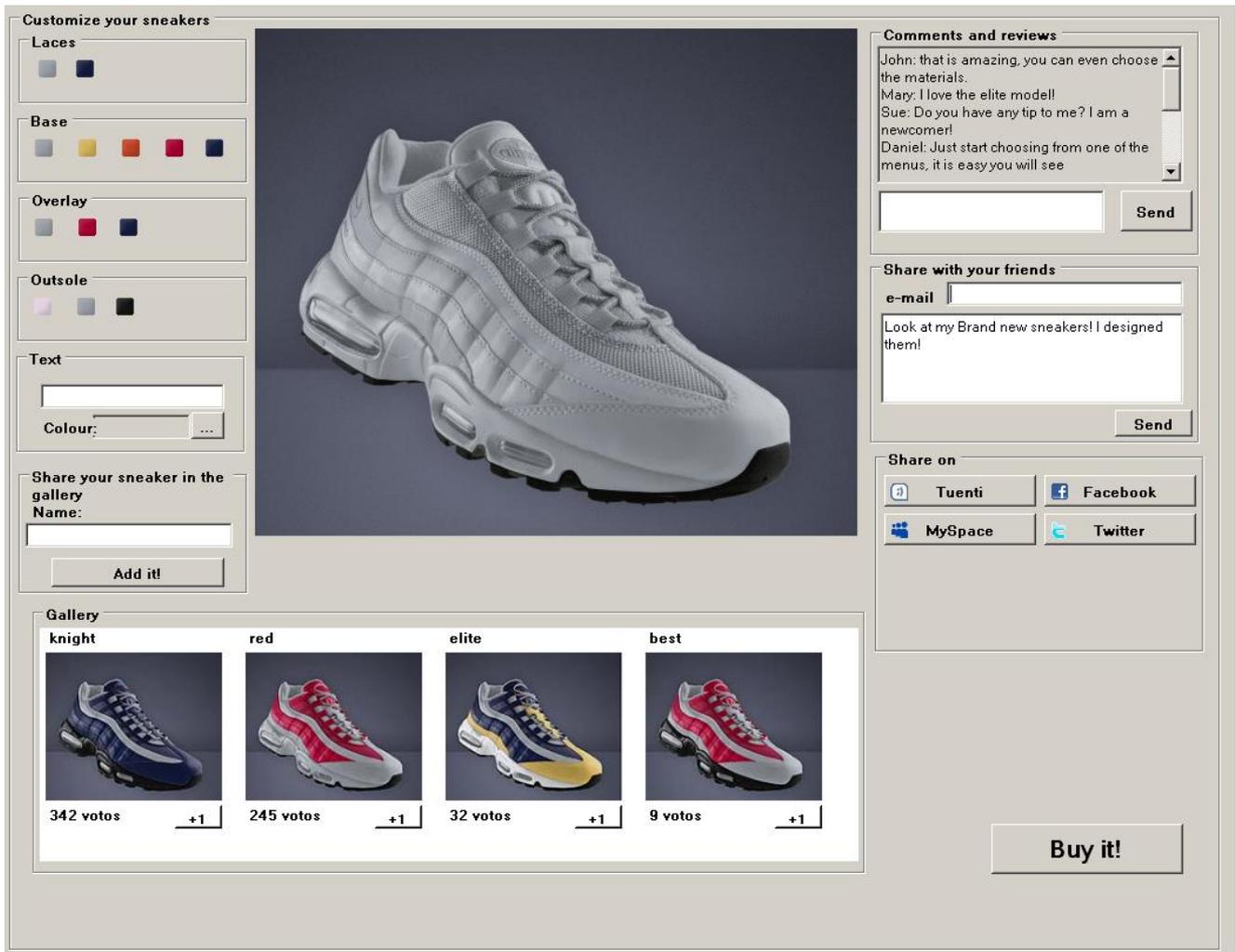


Fig. 2. Website used as experimental stimulus

Table 1
Measurement scales

| VARIABLES (sources) | ITEMS |
|---|--|
| PERCEIVED VALUE CO-CREATION (Dong et al., 2008; Merle, 2008) | COCR_1 I feel that I have participated in the process of creating something COCR_2 During my purchase I felt that I participated in creating something new COCR_3 This application gives me lots of autonomy in creating something I wanted COCR_4 I was able to give complete free rein to my creativity |
| PERCEIVED ENGAGEMENT (Medlin, 2009; Sprott, 2009) | ENGAGE_1 I feel that the firm has taken into account my opinions ENGAGE_2 My interaction with this firm makes me feel valuable ENGAGE_3 I feel I have a special bond with this firm ENGAGE_4 I feel I have a close personal connection with this firm ENGAGE_5 I feel I have a special relationship with this firm |

Table 2
Results of Multivariate and Univariate Tests

| Independent Variables | Multivariate Results | | | Univariate Results | | | | | | |
|----------------------------|----------------------|--------|----------|-----------------------------|----------------|---------------|-------------|---------------|---------------|-------------|
| | Wilk's λ | F | <i>p</i> | Perceived Value Co-creation | | | Engagement | | | |
| | | | | df | MS | F | <i>p</i> | MS | F | <i>p</i> |
| Interaction | .877 | 13.423 | .000 | 1 | 36.000 | 15.846 | .000 | 55.290 | 25.135 | .000 |
| Coproduction | .756 | 30.896 | .000 | 1 | 140.592 | 61.883 | .000 | 36.949 | 16.797 | .000 |
| Interaction x Coproduction | .952 | 4.848 | .009 | 1 | 21.889 | 9.635 | .002 | 4.935 | 2.243 | .136 |
| Error | | | | 192 | | | | | | |