

What motivates and deters users' online co-creation? The role of cultural and socio-demographic factors

¿Qué motiva y disuade a los usuarios de la cocreación en línea? El papel de los factores culturales y sociodemográficos

是什么促使和阻碍了用户的线上共同创造？探寻文化和社会人口因素的作用

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Abstract

Purpose – This paper aims to determine the impact of cultural context and socio-demographic characteristics on the users' deterrents and motivators to co-creation online.

Design/methodology/approach – The data from two different cultures the UK (306 users) and Spain (307 users) have been collected and compared by performing multi-group analyzes (MGAs) across cultural context, age, gender and educational level using a structural equation modeling approach.



Findings – Cultural context, age, gender and educational level moderate the effect of the deterrents and motivators on the attitude and participation in co-creation online: users from individualistic, masculine, with low uncertainty avoidance cultural contexts are expected to be more motivated and express a stronger positive attitude toward co-creation online; young male users exhibit a higher level of positive attitude and higher effect of the motivators toward attitude; on the contrary, old women are exposed to the negative effect of the deterrents; the individuals with basic educational level exhibit a higher level of the deterrents' effect.

Research limitations/implications – The generalizability of the results across different cultural contexts requires further examination and cross-validation.

Practical implications – The MGAs of two different cultures (Spain and the UK) and samples of different ages, gender and educational levels provide practitioners with information, which cultures and groups of users are expected to perform better in co-creation activities online.

Originality/value – The first study empirically examines the moderating effect of cultural context and demographic characteristics on both deterrents and motivators and their effect on the attitude toward co-creation online.

Keywords Co-creation, Multicultural marketing, Cross-cultural studies, Online consumer behavior, PLS-SEM, Multi-group analysis, Culture, Online, Socio-demographics, Deterrents

Paper type Research paper

Resumen

Propósito – determinar el impacto del contexto cultural y de las características sociodemográficas en los factores disuasorios y motivadores de los usuarios para la cocreación en línea.

Diseño/metodología – Se han recogido y comparado los datos de dos culturas diferentes, del Reino Unido (306 usuarios) y de España (307 usuarios), realizando análisis multigrupo a través del contexto cultural, la edad, el género y el nivel educativo, utilizando un enfoque de modelado de ecuaciones estructurales.

Resultados – El contexto cultural, la edad, el género y el nivel educativo moderan el efecto de los elementos disuasorios y motivadores sobre la actitud y la participación en la cocreación online: se espera que los usuarios de contextos culturales individualistas, masculinos y con baja tolerancia a la incertidumbre estén más motivados y expresen una actitud positiva más fuerte hacia la cocreación en línea; los usuarios masculinos jóvenes muestran un mayor nivel de actitud positiva y un mayor efecto de los motivadores sobre la actitud; por el contrario, las mujeres mayores están expuestas al efecto negativo de los disuasores; los individuos con un nivel educativo básico muestran un mayor nivel de efecto de los disuasores.

Limitaciones – La generalización de los resultados en diferentes contextos culturales requiere un examen más profundo y una validación cruzada.

Implicaciones prácticas – Los análisis multigrupo de dos culturas diferentes (España y Reino Unido) y muestras de diferente edad, género y nivel educativo proporcionan a los profesionales información sobre qué culturas y grupos de usuarios se espera que tengan un mejor rendimiento en las actividades de cocreación en línea.

Originalidad – Es el primer estudio que examina empíricamente el efecto moderador del contexto cultural y las características demográficas tanto en los factores disuasorios como en los motivadores y su efecto en la actitud hacia la co-creación online.

Palabras clave – Co-creación, Online, Disuasores, PLS-SEM, Análisis multigrupo, Cultura, Socio-demográfico

Tipo de artículo – Trabajo de investigación

摘要

目的 – 确定文化背景和社会人口特征对用户线上共同创造的阻碍因素和激励因素的影响。

设计/方法 – 数据收集自英国 (306名用户) 和西班牙 (307名用户) 这两种不同的文化背景, 并采用结构方程模型方法, 通过跨文化背景、年龄、性别和教育水平的多组分析对数据进行了比较。

主要发现 – 在阻碍因素和激励因素对在线共同创造态度和参与的影响中, 文化背景、年龄、性别和教育水平起到调节作用: 来自个人主义、阳刚主义、低不确定性规避文化语境的用户对线上共同创造的动机更强, 表现出更积极的态度; 年轻男性用户的积极态度和动机对态度的影响程度较高; 相反, 老年妇女则受到了阻碍因素的负面影响; 具有基础教育水平的个体受阻碍因素影响较高。

研究局限性/研究意义 – 研究结果在不同文化背景下的普适性需要进一步检验和交叉验证。

实践意义 – 对两种不同文化(西班牙和英国)的多组分析, 以及不同年龄、性别和教育水平的样本, 为实践者提供了哪些文化和用户群体有望在线上共同创造活动中表现更好的信息。

这是第一个检验了文化背景和人口特征对抑制因素和激励因素的调节作用, 以及它们对线上共同创造态度的影响的实证研究。

独创性/价值 – 关键词: 共同创造, 线上, 阻碍因素, PLS-SEM, 多组分析, 文化, 社会人口学

文章类型: 研究型论文

1. Introduction

In the past decade, the concept of co-creation, based on service-dominant logic (Vargo and Lusch, 2004) has gained significant attention from both companies and academia. With companies seeking ways to connect with their customers, the internet has become an essential aspect of their marketing campaigns, providing them with the opportunity to reach any user in the online world. Thus, online co-creation has become a strategic instrument for engaging customers in companies' activities (Lee *et al.*, 2012) and a tool for gaining competitive advantages (Guillart, 2014).

As customer participation in co-creation is voluntary, managers seek ways to motivate and encourage customers to share their ideas online. To date, literature on online co-creation activities includes a substantive number of research papers that qualitatively and quantitatively studied the factors that motivate customers to participate in online co-creation projects (Constantinides *et al.*, 2015). However, more attention must be paid to another important aspect of customer participation, i.e. deterrent factors that may negatively affect customers' attitudes toward online co-creation (Dabholkar and Sheng, 2011; Hoyer *et al.*, 2010). Nuttavuthisit (2010, p. 316) emphasized the concept of "resistance" experienced by consumers and "caused by strategies that tend to presume or subsume [their] demands." Although Chepurma and Rialp (2018) identified eight deterrents that users might face during online co-creation, previous literature failed to provide a general model of the motivators and deterrents of online co-creation and empirically examine their effect on consumers' attitude toward online co-creation.

Furthermore, although services marketing emphasizes the importance of socio-demographic factors, such as gender, age and education, in consumer behavior, Verhoef (2003) and Füller (2010) highlighted the significance of studying customer characteristics in the co-creation context, previous literature that considers the potential effects of demographics in online co-creation is very scarce. Similarly, little is known about the effect of a consumer's cultural background on his/her attitude toward co-creation. Voyer *et al.* (2017) suggested that cultural dissimilarities are likely to occur in the co-creation process, given that the identities of different stakeholders involve diverse relational personality features. The lack of quantitative studies that focus on both the deterrents and motivators of online co-creation, as well as how the effects of these factors may vary depending on cultural and socio-demographic factors constitute the motivation for conducting this research.

Therefore, the overall goal of this study is to determine the impact of cultural context and socio-demographic characteristics on the deterrents and motivators for users' online co-creation. To address this goal, this study seeks answers to the following marketing-related research questions:

- RQ1. What effects do deterrents and motivators have on customers' attitudes toward online co-creation and how do these effects influence their participation in online co-creation projects?
- RQ2. Are the stated relationships moderated by a customer's cultural context, his/her age and gender and educational level?

To answer these research questions, multi-group analyzes (MGAs) were conducted using partial least squares structural equation modeling (PLS-SEM) based on data obtained from a sample of Spanish and UK consumers. This study's results can help marketing professionals working in online multicultural co-creation contexts to develop successful co-creation projects that target the most efficient groups of users, to make decisions regarding potential target countries during the internationalization process and the standardization versus adaptation of their co-creation activities (Mandler *et al.*, 2021).

2. Theoretical background

2.1 Motivational and deterring factors in the online co-creation context

Research on the motivation for co-creation was first conducted by Wasko and Faraj (2000), followed by an empirical study regarding co-creation motivators conducted by Nambisan and Baron (2009). Constantinides *et al.* (2015) identified the motivators for online co-creation using the uses and gratification (U&G) model. Fernandes and Remelhe (2016) proposed a four-dimensional structure for motivators. Agnes and Sahid (2019) identified two general motivational factors, namely, the service provider's system and technology and consumer behavior, which is governed by social and financial motivation. Furthermore, Laszkiewicz (2019) found that managers who believed in the positive value of online co-creation activities had the view that users should co-create together without financial remuneration. Merrilees *et al.* (2021) examined motivational factors for internal stakeholders in terms of value co-creation in internal branding.

Hoyer *et al.* (2010) emphasized the importance of examining not only the motivators but also deterrents for online co-creation. Ardichvili *et al.* (2003) identified deterrents to consumers' participation in online knowledge sharing. Moreover, Porter and Donthu (2006) studied the perceived access barriers to using the internet, claiming that, although access barriers exert significant influence on consumer attitudes toward use, perceptions regarding the ease of use and usefulness of the internet had a more significant effect. Nuttavuthisit (2010) introduced the idea that consumers' resistance to co-creation is triggered by the overwhelming number of strategies undertaken by companies. Gerber and Hui's (2013) qualitative study explored the deterrents to participation in online crowdfunding. Correia *et al.* (2015) stated that innovation in terms of online co-creation creates specific barriers and challenges. Furthermore, in their qualitative study, Chepurna and Rialp (2018) identified eight barriers to online co-creation, namely, technology anxiety, lack of trust, scepticism, daily life, task layout, no offline meetings, no shared values and inertia. This study seeks to fill a research gap in examining the deterrents to customers' online co-creation using the structural equation model approach (Table 1).

2.2 Relevance of the cultural context in co-creation online

Literature on national cultures states that culture is an essential part of management, in general, and strategy development, in particular (Schneider and De Meyer, 1991). Cultural distinctions can be assessed by conducting a cross-sectional evaluation of national cultures across shared characteristics, resulting in quantitative culture evaluations (scores). Although not without criticism (Taras *et al.*, 2010), Hofstede's (1980, 2001, 2010) approach leads the field [1]. According to Beugelsdijk *et al.* (2015), who performed a cohort analysis using Hofstede's approach, nations' indicators have changed; however, the differences between countries' values have not changed.

According to Lehdonvirta and Räsänen (2011), there are distinctions in the ways that online identification is associated with users' socio-demographic backgrounds and how it varies between national contexts. Grott *et al.* (2019) applied Hofstede's framework to

Table 1.
Previous studies
related to the topic of
deterrents in co-
creation online

Authors	Objective	Methodology	Deterrents defined
Ardichvili et al. (2003)	Motivation and barriers to participation in virtual knowledge-sharing communities of practice	Qualitative: in-depth case study of three virtual communities of practice of caterpillar	Information hoarding, fear to loose face, fear to let the colleagues down, more clear directions, to earn the right to post, to a difficult problem
Porter and Donthu (2006)	Using the technology acceptance model to explain how attitudes determine internet usage: the role of perceived access barriers and demographics	Quantitative: SEM	Age, education, income and race are associated differentially with beliefs about the internet and these beliefs influence a consumer's attitude toward and use of the internet
Gerber and Hui (2013)	What motivates and deters participation in crowdfunding community?	Qualitative: 83 semi-structures interviews	Fear of failure, lack of trust
Correia et al. (2015)	Marketing communications model for innovation networks	Qualitative: an exploratory case study	Mentioned the existence of barriers, but did not explore them
Chepurina and Rialp (2018)	Deterrents to co-creation online	Qualitative: 40 semi-structured interviews with users and marketing professionals	Technology anxiety, lack of trust, scepticism, daily life, task layout, no offline meeting, no shared values, inertia

demonstrate that cross-cultural differences exist in the direct relationships among co-creation, loyalty and word-of-mouth.

Following previous studies, this study suggests that Hofstede's cultural theory is a valid source for evaluating the online co-creation processes of users from different countries. Hence, this study seeks to fulfill the objective of this research by using [Hofstede's \(2010\)](#) ultimate model, which comprises six cultural dimensions, namely, individualism/collectivism, power distance, masculinity/femininity, uncertainty avoidance, long-term orientation and indulgence. To assess the impact of cultural context, users from Spain and the UK were selected as the research sample. We predicted that the cultural dissimilarities between these two countries may affect users' participation in online co-creation practices, particularly due to the differences they present in their cultural dimensions.

2.3 Relevance of the socio-demographic characteristics in co-creation online

[Cambra-Fierro et al. \(2017\)](#) emphasized the importance of considering users' socio-demographic features in the services marketing domain. Consequently, various authors examine consumer behaviors based on various socio-demographic characteristics such as age, gender and educational level ([Shahin and Chan, 2006](#); [Verhoef, 2003](#)). Online co-creation involves a self-selection process for the participation of individuals with different socio-demographic characteristics. Additionally, online behaviors vary depending on these personal characteristics. [Hutter et al. \(2015\)](#) studied the impact of users' personal characteristics on their motivation and favorable behaviors in an online co-creation environment. Furthermore, [Bogers et al. \(2017\)](#) urged scholars to conduct further research regarding the role of socio-demographic characteristics in online co-creation.

This study aimed to fill in this research gap by examining the possible moderating effects of gender, age and educational level to assist managers in developing successful co-

creation practices for diverse target groups and particular product types (Füller and Bilgram, 2017).

3. Hypotheses development

This study adapted the research model developed by Constantinides *et al.* (2015) and the conceptual model developed by Chepurina and Rialp (2018). Constantinides, *et al.*'s (2015) research model examined the effect of four antecedents (motivators) on customer attitudes and participation behaviors toward online co-creation by applying the U&G theory. They also proposed that financial motivational factors should be added to future research models. Chepurina and Rialp's (2018) conceptual model defined eight deterrents that affect user attitudes toward online co-creation and proposed that they be added to Constantinides *et al.*'s (2015) model. Furthermore, the influence of both motivators and deterrents is supported by the dual factor model, widely used in information systems literature (Cenfetelli, 2004; Tsai *et al.*, 2019). However, to the best of our knowledge, no previous empirical research examined the effects of both deterrents and motivators on customer attitudes toward online co-creation, and the moderating effect of cultural and socio-demographic contexts on this relationship.

3.1 *The effect of the consumer's deterrents on the attitude in co-creation online*

The existence of both deterrents and motivators can be explained by the dual factor model. Furthermore, the possible negative effect of deterrents on consumer attitudes toward online co-creation can be examined using behavior reasoning theory (BRT). BRT suggests that "reasons serve as important linkages between people's beliefs, global motives (e.g. attitudes, subjective norms and perceived control), intentions and behavior" (Westaby, 2005, p. 97). According to this theory, reasons are "specific subjective factors people use to explain their anticipated behavior" (Westaby, 2005, p. 100). According to BRT, reasons can be divided into two subgroups, namely, "reasons for" and "reasons against" performing a particular behavior. In previous literature, these two sub-dimensions are also referred to as facilitators/barriers (Venkatesh, *et al.*, 2003).

Furthermore, according to Bagozzi, *et al.* (2003), measures that evaluate reasons and their rationalizations can provide support for "grounds for attitude formation" (p. 931). Moreover, even if an individual has strong "reasons for" a behavior, he/she might still resist it because of "reasons against" the behavior. In the context of online co-creation, deterrents constitute specific factors that reflect individuals' "reasons against" customers' participation in online co-creation projects. Hence, the following hypothesis was proposed:

- H1. Deterrents to online co-creation have a negative influence on customers' attitudes toward online co-creation.

3.2 *The effect of consumer's motivators on the attitude in co-creation online*

According to Constantinides *et al.* (2015), the U&G theory is an effective tool for explaining the different motivational factors that affect customers' eagerness to participate in online co-creation activities. This theory helps to classify the types of benefits users receive from using certain media and assess how these benefits influence their behavior in a particular media space (Katz *et al.*, 1974). The internet is viewed as a contemporary communication medium. Therefore, using the U&G theory framework can help to explain the various benefits users may obtain from their online communications and how these benefits affect their consequent participation (Luo, 2010).

The U&G theory specifies four different types of benefits (motivators) that users can obtain from using media (in this case, participation in online co-creation), namely, cognitive benefits, which strengthen individuals' comprehension of the environment and information acquisition; social integrative benefits, which strengthen consumers' connections with their communities; personal integrative benefits, which intensify consumers' reliability, position and self-assurance; and hedonic or affective benefits, which provide consumers with visual or satisfying experiences. As proposed by [Constantinides et al. \(2015\)](#), financial benefits were considered in this study to examine the role of deterrents.

Recent studies have used the U&G framework in internet-based and technology-based settings ([Flavián and Gurrea, 2007, 2008](#); [Kaye and Johnson, 2002](#); [Stafford et al., 2004](#)). As such, the U&G framework offers a suitable theoretical base for this context. Thus, the following hypothesis was proposed:

H2. Motivators for online co-creation have a positive effect on customer attitudes toward online co-creation.

3.3 The effect of attitude on the user's participation in co-creation online

The relationship between customer attitudes and behaviors can be explained by the theory of planned behavior (TPB). This theory states that individuals are more likely to perform a behavior when he/she has a positive attitude toward this behavior, recognizes that significant others believe that he/she should be engaged in this behavior and can control the projected obstacles ([Ajzen, 1991](#)). The TPB was applied in previous studies to investigate the acceptance of computer and internet technologies ([Kim et al., 2016](#)) and online co-creation ([Sarmah, et al., 2018](#)). Therefore, the following hypothesis was proposed:

H3. Positive attitudes toward online co-creation positively influence customer participation in online co-creation.

3.4 The moderating effect of cultural context

To examine the influence of cultural context, users from two different cultures, namely, Spain and the UK, were compared. This study used [Hofstede's \(2010\)](#) six-dimensional model to examine how scoring differently in the dimensions may affect users' personal deterrents and motivators and the effect of these dimensions on attitudes toward online co-creation.

British users tend to score high in individualism (89), masculinity (66) and indulgence (69), which implies that individuals in the UK are very private in their lives, prefer to look only after themselves and their happiness depends on the fulfillment of their personal objectives and high level of ambition. Moreover, British users tend to satisfy their impulses and generally have a positive attitude toward the future. In contrast, Spanish users tend to score low in terms of these dimensions. Spain has a collectivist restrained society, wherein individuals prefer to work in groups (individualism: 51), cooperate and build interpersonal relationships, refuse to stand out of the crowd (masculinity: 42) and do not indulge their impulses (indulgence: 44). Spanish society is a perfect example of a hierarchical society as opposed to British society, wherein people strive for fair play and minimization of inequalities (power distance: 35 for the UK; 57 for Spain). Furthermore, British people have a very low level of uncertainty avoidance (35; i.e. more confidence in face of the ambiguous and unfamiliar situations), which combined with their high levels of individualism can indicate an augmented need for innovation and consumerism of the latest technological products ([Hofstede, 2010](#)). In contrast, due to their high level of uncertainty avoidance (86)

and low level of long-term orientation (48), Spanish users tend to have a need for clear structures, lifetime traditions and demonstrate great concern with new unclear circumstances.

Following this discussion, in contrast to Spanish users, British users may have a higher predisposition to online co-creation and may be less affected by deterrents. Therefore, the following hypotheses were developed:

- H4.* (a) The effect of deterrents is stronger for Spanish rather than British customers; (b) the effect of motivators and (c) the effect of the attitude are stronger for British rather than Spanish users.

3.5 The moderating effect of socio-demographic characteristics

According to [Venkatesh et al. \(2003\)](#), users' socioeconomic characteristics are crucial factors in the evaluation of technological performance. Furthermore, the authors emphasized the importance of characteristics, such as gender and age, in terms of the descriptive ability of the models examined.

3.5.1 Age. Younger users generally have a better experience with using the internet, and gain greater value from features such as practicality and attitude. In contrast, older people view internet usage as more risky and struggle with implementing complicated commands and assign greater importance to self-efficacy ([Trocchia and Janda, 2000](#)). Previous studies included age as an appropriate variable for the justification of online shopping behavior ([Zhang, 2009](#)). Furthermore, [Cambra-Fierro et al. \(2017\)](#) found that older individuals are more long-term-oriented, show higher conservatism and risk aversion, while younger individuals are more short-term-oriented and less risk averse. Therefore, the following hypotheses were generated:

- H5.* (a) The effect of deterrents is higher for older users than for younger users, while (b) the effects of motivators and (c) attitudes are higher for younger users than for older users.

3.5.2 Gender. Gender discrepancies were found to be significant when evaluating users' innovative behaviors ([Von Hippel et al., 2012](#)), risk perception ([Kolsaker and Payne, 2002](#)) and attitudes toward technologies ([Brunner and Bennett, 1997](#)). Women tend to be more anxious about risk-related online behavior than men. Women's anxiety about new technologies also influences their self-efficacy in an online environment, resulting in risk averse and less confident behavior. Subsequently, women require more time to decide whether they want to try something novel ([Sanchez-Franco, 2006](#)). Furthermore, men demonstrate higher demand and need instant results, whereas women tend to have an intense sense of justice and loyalty ([Homburg and Giering, 2001](#)). Similarly, men tend to have more pronounced individualistic characteristics and are more concerned with success than women ([Venkatesh et al., 2003](#)).

As these dissimilarities between men and women influence internet usage and technology acceptance, it can be assumed that they can also have a moderating effect on the online co-creation framework. Thus, the following hypotheses was proposed:

- H6.* (a) The effect of deterrents is higher for women than for men, while (b) the effects of motivators and (c) positive attitudes are higher for men than for women.

3.5.3 Educational level. [Li et al. \(1999\)](#) stated that education was a significant factor for predicting the online purchasing frequency of internet users. Furthermore, [Wang and](#)

Fasenmaier (2004) observed differences between online users with different educational backgrounds in terms of their requirements regarding the functionality of online resources. Individuals with an advanced educational level (university degree) assigned greater importance to functionality and social needs compared with users that had a basic school diploma. Additionally, individuals with an advanced level of education demonstrated higher levels of participation. Therefore, the following hypothesis was developed:

- H7. (a) The effect of deterrents is higher for individuals with a basic educational level, while (b) the effects of motivators and a positive attitude are higher for individuals with an advanced level of education.

4. Methodology

4.1 Data collection and sample

Because of the online nature of the current research, the survey was sent to the internet users by undertaking a convenience sampling approach (Lavrakas, 2008).

Based on the prior literature (Chepurina and Rialp, 2018; Constantinides *et al.*, 2015) and current study context, we designed a survey that reflected the reasons that may serve as motivators and deterrents to customer's attitudes toward co-creation online. This provisional survey was sent via social media websites including Facebook and LinkedIn to test the comprehension and correctness of the questionnaire. On the basis of 136 responses, some of the questions were reorganized and paraphrased for better understanding.

Two independent companies performed the data collection, namely, Netquest in Spain and SmartSurvey in the UK. The finalized survey was sent to the sample of Spanish and the UK population: 307 completed responses were obtained from the Spanish sample and 306 valid responses from the UK. The results are presented in Table 2. We can observe that in the UK the number of users who have previously participated in co-creation online is three times higher than those from Spain. While it seems that the percentage of potential users who would like to be a part of co-creation online is quite high, there are 30.34% in total of users that either do not want to repeat or even do not express the desire to try for the first time participating in co-creation projects online. In other words, companies have almost 1/3 of the potential users that they can reach by knowing what are the reasons for not participating.

4.2 Technique of analysis

Stata13 software was used to perform the exploratory and confirmatory factor analyzes. Subsequently, the PLS-SEM approach was used using SmartPLS 3.0 to conduct the data analysis. PLS was suitable for data analysis in the current study for the following reasons, namely, this study's complex model included both reflective and formative constructs and multivariate normal data is not a strict requirement for PLS (satisfactory results were obtained for all variables and subsamples; Lin *et al.*, 2014).

4.3 Measurement of variables

Based on previous literature, multi-item scales were generated for the constructs in this study. The scales for customer participation, attitudes and motivators in terms of online co-creation were adopted from Constantinides *et al.*'s (2015) study. The scales for deterrents were adapted from Chepurina and Rialp's (2018) qualitative research and a number of the studies that mentioned deterrents (Mullins *et al.*, 2014; Bharti *et al.*, 2014). All measures used

Variables	No. of cases		
	Total	Spain (N = 307)	UK (N = 306)
<i>Gender</i>			
Male	298	151	147
Female	315	156	159
<i>Age</i>			
18–24	78	42	36
25–34	116	53	63
35–44	142	69	73
45–54	105	62	43
55–64	101	47	54
65–74	66	34	32
75+	5	0	5
<i>Previous participation in co-creation on-line</i>			
Yes	92	23	69
No	521	284	237
<i>From those who participated, if he/she wants to repeat</i>			
Yes	75	18	57
No	17	5	12
<i>From those who did not participate, if he/she wants to try</i>			
Yes	359	192	160
No	169	92	77

Table 2.
Demographic information

a five-point Likert scale response format, with “1” corresponding to “strongly disagree” and “5” corresponding to “strongly agree.”

The construct “deterrents” was a second-order formative construct, composed of eight first-order reflective constructs (Appendix). Following [Coltman et al.’s \(2008\)](#) framework, the formative nature of the “deterrent” construct can be explained by both theoretical and empirical considerations. In terms of theoretical considerations, the “deterrents” construct was based on eight indicators. Moreover, variations in the construct did not produce any variations in the item measures, while variations in the item measures caused variations in the “deterrent” construct. Additionally, the items that comprised the “deterrent” construct were not interchangeable. In terms of empirical considerations, items had the same-direction relationships and the significance of relationships with the antecedents/consequences are dissimilar to the construct ([Coltman et al., 2008](#), p. 1255). Exploratory factor analysis was conducted to confirm that all subsamples had the same number of factors.

The “motivators” construct was a second-order formative construct, composed of the five first-order reflective constructs. The formative nature of “motivators” can be attributed to the same considerations as those for the “deterrents” construct. A confirmatory factor analysis approach was undertaken to confirm the validity of items previously studied by [Constantinides et al. \(2015\)](#).

“Attitude” and “participation” were both first-order reflective constructs. Confirmatory factor analysis was undertaken to confirm the validity of these items, which were previously studied by [Constantinides et al. \(2015\)](#).

5. Results

5.1 Partial least squares structural equation modeling analysis

Outer model analysis. The model was tested using PLS-SEM for the entire data set. The validity of the first-order constructs in the measurement model was assessed using convergent and discriminant validity tests. Considering that the development of the scale in this study is still in the early stages and the acceptance of weak items can assist in acquiring useful information to obtain a better construct score (Chin, 2003), convergent validity was evaluated by measuring factor loadings ($FL > 0.5$) (Gefen *et al.*, 2000) and composite reliability ($CR > 0.7$; Nunnally, 1978). In this study's model, a vast majority of the FL values and all CR values were in the acceptable ranges and significant at the 1% level. However, there were still a few FL values less than 0.5 that were retained. The internal reliability of the scales was assessed using Cronbach's alpha, which had values greater than 0.7 for all constructs (Hair *et al.*, 2019).

In this research, the average variance extracted ($AVE > 0.5$) (Fornell and Larcker, 1981) and the heterotrait-monotrait ratio of correlation ($HTMT < 1$; Henseler *et al.*, 2015) were calculated to determine the discriminant validity of the different subsamples. The AVE values for all constructs exceeded 0.5 and the maximum HTMT value was 0.898.

Analysis of second-order formative constructs. Bootstrapping was conducted for 1,000 resamples to assess the weights of the two second-order formative constructs (deterrents and motivators) for the total sample and all the subsamples. The results [2] showed that some indicators were not significant even at the 90% significance level ($p > 0.1$). However, considering the exploratory nature of the current research and the suggestions made by Chin (2003), the non-significant indicators were conserved in the model to measure the effect of culture and socio-demographics.

Variance inflation factors (VIFs) were generated for all latent variables in the model using the SmartPLS software. All VIF values were less than 3.3; thus, the analysis was free of common method bias (Kock, 2015).

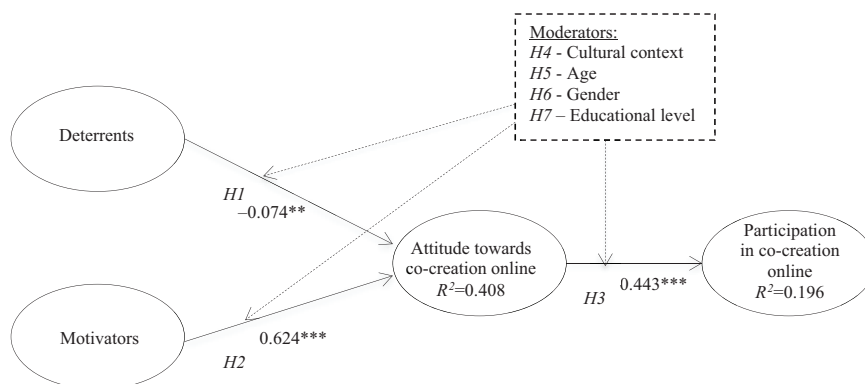
Inner model analysis and path estimates. The predictive ability of the research model was measured using the explained variance ($R^2 > 0.1$) and f^2 statistics of each dependent construct (Figure 1). Moreover, all constructs passed the Stone-Geisser's Q^2 test (Stone, 1974; Geisser, 1974) with the highest value being 0.559.

Applying the bootstrapping method, the path coefficients for the entire sample ($N = 613$) showed that the deterrents had a significant negative effect on user attitudes toward online co-creation, supporting *H1*. Moreover, the motivators had a significant positive effect on user attitudes, confirming *H2*. Additionally, user attitudes toward co-creation had a significant positive effect on participation in online co-creation; thus, *H3* was supported.

5.2 Multi-group analyzes

This research involved MGAs for three factors, namely, cultural context, age and gender and educational level. For each MGA, the following steps were implemented:

- Testing the discriminant and convergent validity of the outer model separately for each sample (i.e. testing that $FL > 0.5$ (Chin, 2003), $CR > 0.7$, $AVE > 0.5$ and Cronbach's alpha > 0.7); satisfactory results were obtained for all subsamples.
- Validating differences across the subsample results to test the consistency of construct measurements and meanings; no statistically significant difference was detected ($p > 0.05$).
- Testing the invariability of the model; partial invariability was detected with four FL with p -values < 0.05 [3].



Notes: Deterrents: technology anxiety, lack of trust, skepticism, daily life, task layout, no shared values, no offline meeting, inertia. Motivators: learning, social cognitive, personal integrative, hedonic integrative, financial integrative. $***p < 0.01$, $**p < 0.05$, $*p < 0.1$, f^2 : deterrents 0.209, motivators 0.635, attitude 0.244

Figure 1.
Research model

- Running multi-group bootstrapping in SmartPLS 3.0 to identify the path coefficients and determine whether there were significant differences across samples.
- Adding the explained variance R^2 , f^2 and predictive relevance test Q^2 values to the model analysis [4].

Cultural context. Bootstrapping was conducted for the path coefficients of the Spanish ($N = 307$) and the UK subsamples ($N = 306$) (Table 3).

A statistically significant difference (90%) was observed in the effect of deterrents on attitudes between the UK and Spain. Deterrents had a strong negative effect on customer attitudes in the Spanish subsample only. Regarding the UK subsample, the findings indicate that this effect was not statistically significant. Furthermore, motivators were found to have a strong significant effect on positive attitudes toward online co-creation, and this effect was significantly higher for users from the UK than for users from Spain. Similarly, positive attitudes toward online co-creation had a strong significant effect on customers' participation in online co-creation projects, and this effect was significantly higher in the UK subsample than the Spanish subsample.

Therefore, $H4(a)$ – $H4(c)$ could not be rejected. The results show that cultural context has a moderating effect on the impact of deterrents and motivators on attitudes toward online co-creation and user participation in online co-creation projects.

Age and gender. To perform a multi-group analysis of age and gender, the two variables were first examined to determine if there was a correlation between them. Age and gender were found to be significantly related ($p < 0.05$). Therefore, the entire sample was divided into four groups, namely, young (aged 34 years or less) women ($N = 123$) and men ($N = 71$) and older (aged 35 years or more) women ($N = 181$) and men ($N = 222$).

The results of the MGA bootstrapping inner model are presented in Table 3. According to the multi-group analysis, deterrents did not have a significant effect on young individuals. Moreover, the effect of deterrents was only significant for older women. The

Variables	UK (N = 306) Coeff.	Spain (N = 307) Coeff.	MGA <i>p</i> -value (SP vs UK)	UK <i>R</i> ²	Spain <i>R</i> ²	UK <i>f</i> ²	Spain <i>f</i> ²	
Attitude → participation	0.553***	0.385***	0.014	0.173	0.310	0.209	0.450	
Motivators → attitude	0.681***	0.536***	0.025	0.358	0.459	0.386	0.550	
Deterrents → attitude	-0.03	-0.13***	0.088	-	-	0.221	0.231	
	WY(N = 139) Coeff.	WO (N = 181) Coeff.	MY(N = 71) Coeff.	MO (N = 222) Coeff.				
Attitude → participation	0.373**	0.396**	0.641**	0.450**				
Motivators → attitude	0.697**	0.558**	0.728**	0.597**				
Deterrents → attitude	-0.006	-0.208**	-0.026	-0.056				
MGA (<i>p</i> -value)	Attitude → participation		Motivators → attitude	Deterrents → attitude				
WY-WO	0.575		0.108	0.031				
MY-MO	0.018		0.072	0.375				
WY-MY	0.010		0.370	0.584				
WO-MO	0.310		0.371	0.078				
	WY		WO		MY		MO	
	<i>R</i> ²	<i>f</i> ²	<i>R</i> ²	<i>f</i> ²	<i>R</i> ²	<i>f</i> ²	<i>R</i> ²	<i>f</i> ²
Attitude → participation	0.170	0.205	0.174	0.210	0.415	0.711	0.379	0.247
Motivators → attitude	0.490	0.609	0.376	0.495	0.514	0.494	0.198	0.503
Deterrents → attitude	-	0.203	-	0.207	-	0.251	-	0.262
	BEDU Coeff.	HEDU Coeff.	MGA (<i>p</i> -value)	BEDU <i>R</i> ²	HEDU <i>R</i> ²	BEDU <i>f</i> ²	HEDU <i>f</i> ²	
Attitude → participation	0.409**	0.499***	0.111	0.167	0.249	0.201	0.331	
Motivators → attitude	0.626**	0.623**	0.522	0.417	0.396	0.662	0.626	
Deterrents → attitude	-0.102*	-0.033	0.103	-	-	0.212	0.211	

Table 3.
The MGA for
cultural context, age
and gender and
educational level

Notes: Y-young, O-old, W-women, M-men, BEDU-basic education, HEDU-high education, *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$

MGA confirmed that there was a significant difference in the effect of deterrents on attitudes toward co-creation between women of different ages and older individuals of different genders. Thus, *H5(a)* and *H6(a)* were partially rejected, as age only had a moderating effect for women, while gender only had a moderating effect for older individuals.

The effect of motivators on positive attitudes toward online co-creation was statistically significant for all four samples. The *t*-test results indicate a significant difference between the age of both women and men: younger individuals had a stronger effect on the motivators on their attitudes toward online co-creation. Hence, *H5(b)* could not be rejected, as age had a moderating effect on the motivators. In contrast, *H6(b)* can be fully rejected, as gender does not have a moderating effect on motivators for online co-creation.

Positive attitude had a strong positive effect on all four subsamples. There was a significant statistical difference ($p < 0.05$) between the attitudes of younger and older men: younger men had a stronger positive attitude toward online co-creation than that of older men. In contrast, the subsamples of older and younger women did not present significant differences. Therefore, *H5(c)* was partially rejected because age only had a moderating effect on the attitudes of male subjects. Furthermore, *H6(c)* was also partially rejected, as gender only had a moderating effect on the attitudes of young individuals.

Educational level. The entire sample was divided into two groups, namely, individuals with basic education (high school diploma, $N = 385$) and those with advanced education (university degree, $N = 228$). The bootstrapping results are presented in [Table 3](#).

Deterrents were found to have a significant negative effect on the attitudes of individuals with basic education. This effect was statistically different for the two subsamples. Hence, *H7(a)* could not be rejected, as the educational level has a moderating effect on the deterrents to online co-creation. The effects of attitudes and motivators were strong and positive across both groups, and the difference between the path coefficients was not significant. Therefore, *H7(c)* and *H7(b)* were rejected.

6. Conclusions and implications

Following the goal of determining the impact of cultural context and socio-demographic characteristics on the deterrents and motivators for users' online co-creation, this research observed a significant negative effect of deterrents, a concept that was first qualitatively described by [Chepurma and Rialp \(2018\)](#) and incorporated into [Constantinides et al.'s \(2015\)](#) model, by simultaneously measuring the effects of deterrents and motivators on customer attitudes and participation regarding online co-creation activities.

From an academic viewpoint, this is the first study to empirically examine the effects of both deterrents and motivators on customer attitudes toward online co-creation. Therefore, the current research is of academic importance, as it developed a model of the formative and reflective constructs that can be used to measure the deterrents and motivators for users' online co-creation. Moreover, this study provides various new opportunities for future research. The conclusions and managerial implications of this study are presented in [Table 4](#).

Conclusions		Theoretical and managerial implications
	The effect on customer attitudes is greater for motivators than for deterrents. The coefficient of this effect was low but statistically significant	Marketing strategies should be developed with a focus on motivators. However, negative effect of deterrents (e.g. technology anxiety, lack of trust, skepticism, daily life, task layout, no shared values, no offline meeting and inertia) should also be considered
Cultural context	Deterrents to online co-creation only have a significant negative effect on the attitudes of Spanish users. The effect of motivators is higher for users in the UK than those in Spain. The effect of attitude on user participation is significantly higher for users in the UK than those in Spain	Cultures that are similar to British culture achieve higher participation rates in online co-creation marketing. Such cultures are USA, Australia, Canada and Denmark. Cultures similar to Spanish culture (e.g. Greece, Portugal, Brazil, Argentina, Chile and Russia) should be avoided, as lower levels of user contribution are expected
Age and gender	Older women (>35 years) experience a stronger negative effect of deterrents as compared to younger individuals (<34 years). Younger men demonstrate stronger positive attitudes as compared to their older counterparts Older women experience a stronger effect of deterrents than older men and men tend to have stronger positive attitudes toward online co-creation than women	Different levels of participation are expected from different user groups (going from the highest to lowest rates): young male users (<34 years), young female users (<34 years), older male users (>34 years) and older female users (>34 years) Marketers should choose individuals that have a university degree education before those with only a high school diploma
Education level	Individuals with high school diplomas tend to be more anxious with technology use or still need to acquire skills necessary for online co-creation	

Table 4. Conclusions and theoretical and managerial implications

7. Limitations and future research

This study has certain limitations that provide avenues for future research. First, it would be interesting to use the same research model to analyze the influence of deterrents depending on the type of co-creation (ideas, business process or new product development).

Second, Hofstede's cultural theory has been highly criticized and has its own limitations, i.e. the ambiguity of the connections between diverse levels of culture, the disregard for other characteristics such as communication styles, cultural irresponsibility and "artifactual elements of culture" (McSweeney, 2002; Taras *et al.*, 2010). Furthermore, the generalizability of the results obtained for different cultures requires further examination and cross-validation.

It would be enlightening to understand the moderating and mediating effects of the relationship between deterrents and user attitudes and between user attitudes and participation. These effects may include the perceived risk of use, changes to brand reputation, customer brand loyalty, etc. It would also be interesting to understand why practically the entire Spain subsample (93%) had not participated in online co-creation previously, while 77% of the UK subsample had. Can previous experience serve as a mediator or moderator of the deterrents and motivators in the proposed model? Why do users in the UK participate more and repeat less and why is there a high percentage of individuals who would like to participate but have not yet done so?

Additionally, given the existence of globalization, future studies that perform transnational analyzes for each respondent characteristic could be of great value. These analyzes can reveal similarities and/or differences motivated by these characteristics rather than geographic factors only. Finally, this study did not examine the methods in which the identified deterrents can be addressed. Future research should define these methods and include them in the structural model.

Notes

1. The importance of Hofstede's culture framework is evident in the growing number of citations for his research, placing his studies among the most highly cited works in social science.
2. The weights for the two second-order formative constructs (deterrents and motivators) are available upon request.
3. Full equivalence is not strictly necessary to make a comparison across groups, i.e. if at least two items per latent variable are invariable, multi-group assessment can be performed validly (Byrne *et al.*, 1989).
4. Due to length restrictions, tables containing the results of the MGA analyzes are only available upon request.

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Deterrents

Technology anxiety (adapted from *Meuter et al., 2003*). $\alpha = 0.893$; CR = 0.918; AVE = 0.651

- I do not think that my ideas would benefit the project I am participating in.
- I feel that I am incompetent to share my thinking for this project.
- I am sure that I do not have enough knowledge/experience to participate in this online project.
- I am not confident that my experience satisfy the objectives of the project.
- I think that my age is a constraint for participating in the co-creation projects online.
- There are younger people out there who would be more confident in handling online projects.

Lack of trust (adapted from *Bharti et al., 2014*). $\alpha = 0.907$; CR = 0.935; AVE = 0.782

- The company that I am helping by participating in the online project will always keep the promises it makes.
- The company that I am helping by participating in the online project would not knowingly do anything to disrespect my ideas.
- The company that I am helping by participating in the online project behaves in a consistent manner.
- The company that I am helping by participating in the online project is truthful in dealing with all the members.

Skepticism (adapted from *Mangleburg and Bristol, 1998*). $\alpha = 0.864$; CR = 0.896; AVE = 0.554

- I am not going to be compensated at all.
- Some of the other participants will be rewarded more than I will.
- My ideas belong only to me and are not to be shared with wide community unless protected by the copyright law.
- It is not clearly stated that my idea will be mentioned under my name.
- I feel that the company is so big that it would not hear my voice among the others.
- My idea will be lost among the others.
- I think that this huge company will not pay attention to all the ideas.

Daily life (adapted from *Ansari and Mela, 2003*). $\alpha = 0.871$; CR = 0.921; AVE = 0.795

- I do not have free time for co-creation projects online.
- My family/work obligations take too much of my personal time.
- My everyday schedule is very busy, co-creation online would occupy too much time.

Task layout (adapted from *Ansari and Mela, 2003*). $\alpha = 0.809$; CR = 0.875; AVE = 0.637

- The task is described in a complicated manner.
- There is an overload of information.
- The task of the project is not clear and understandable.

- I do not find the website of co-creation project to be easy to use.

No shared values (adapted from [Rokeach, 1973](#)). $\alpha = 0.847$; CR = 0.907; AVE = 0.765

- I do not share the purpose of this company.
- I do not agree with the vision of the company.
- I do not feel committed to the goals of this online co-creation project.

No offline meeting (adapted from [McCully et al., 2011](#)). $\alpha = 0.824$; CR = 0.877; AVE = 0.588

- I want to see people with who I am going to work in co-creation.
- I would like to interact in person with other participants of the co-creation project.
- It bothers me to use the machine when I could talk with a person instead.
- I believe there cannot be a co-creation only online.

Inertia (adapted from [Mullins et al., 2014](#)). $\alpha = 0.758$; CR = 0.840; AVE = 0.571

- I feel that my reference group would not consider participating in co-creation projects online.
- My friends are saying that co-creation online is senseless.
- I will do it only if my friends will join me in the project.
- When I see a complicated question I quit.
- I am creative only when I feel the time pressure.

Motivators (adapted from [Constantinides et al., 2015](#))

Learning $\alpha = 0.870$; CR = 0.920; AVE = 0.794

- Enhance my knowledge about the product and its usage.
- Enhance my knowledge on product trends, related products and technology.
- Help me make better product decisions as consumers.

Social cognitive $\alpha = 0.838$; CR = 0.902; AVE = 0.755

- Expand my personal network.
- Raise my status/reputation as product expert in my personal network.
- Enhance the strength of my affiliation with the customer community.

Personal integrative $\alpha = 0.845$; CR = 0.897; AVE = 0.689

- They are likely to positively affect my professional career.
- Offer me satisfaction from influencing product design and development.
- Offer me satisfaction from influencing product usage by other customers.
- Offer me satisfaction from helping design better products.

Hedonic integrative $\alpha = 0.876$; CR = 0.915; AVE = 0.729

- Contribute in spending some enjoyable and relaxing time.
- Contribute in fun and pleasure.

-
- Entertain and stimulate my mind.
 - Offer me enjoyment deriving from problem-solving, idea generation, etc.

Financial/material integrative $\alpha = 0.819$; $CR = 0.880$; $AVE = 0.648$

- Enhance my financial position directly.
- Contribute in creating cheaper products.
- Enhance my financial position indirectly (e.g. by buying products offering higher value).
- Deliver non-financial rewards (e.g. free samples and beta products).

Positive attitude (adapted from *Constantinides et al., 2015*). $\alpha = 0.784$; $CR = 0.874$; $AVE = 0.698$

- Companies must make it possible for users to be involved in the development of new products/services.
- Users must be able to test product concepts before these are launched.
- Intensive involvement of final customers in the new product development process results in better products/services.

Participation in co-creation online (adapted from Westaby, 2005). $\alpha = 0.754$; $CR = 0.849$; $AVE = 0.668$

- I participated in co-creation activities online when no financial or other types of reward was offered.
- I rated a product or service after purchase out of my own initiative.
- I rated a product or service after purchase because I was invited to do so by the seller.

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