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Co-Creation: Customer Integration in Social Media Based Product and Service Development

Carlota Lorenzo-Romero^{a*}, Efthymios Constantinides^b, Leonine A. Brünink^c

^{a*}University of Castilla La-Mancha, Marketing Department, Plaza de la Universidad, 1, 02071 Albacete, Spain, Carlota.Lorenzo@uclm.es

^bUniversity of Twente, School of Management and Governance, Business Administration, P.O. Box 217, 7500AE Enschede, The Netherlands, e.constantinides@utwente.nl

^cUniversity of Twente, P.O. Box 217, 7500AE Enschede, The Netherlands, l.a.brunink@student.utwente.nl

Abstract

Due to the rising level of global competition as well as a fast-growing number of innovations organizations are nowadays forced to find new ways to attract, gain and sustain loyal customers in order to stay competitive. Co-creation, the active involvement of customers in the process of new product and service development, has been identified as a reliable source of competitive advantage; however for most companies it still represents a challenge to find customers that are willing to openly cooperate and share their ideas and knowledge. This paper examines four different types of benefits derived from the Uses and Gratification approach motivating customers to participate in online co-creation activities. A pilot questionnaire and its practical applicability are being tested, confirming that customers' participation is in fact stimulated by the four identified types of benefits and indicating that co-creators differ in their motivational levels. Finally, some recommendations on how to adapt the questionnaire for future research are given.

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* Corresponding author. Tel.: +34 967 599200 Ext. 2310; fax: +34 967 599216.

E-mail address: Carlota.Lorenzo@uclm.es

1. Introduction

The introduction of Web 2.0 and different social media platforms has contributed to the development of a new era of customer empowerment enabling customers to interconnect worldwide and easily share and exchange personal, social and scientific knowledge with like-minded individuals (Lee, S. M., Olson, D. L., & Trimi, S. 2012).

Consequently, customers are well-informed, more conscious about their needs and have a clear conception of which products or services they are searching for (Helms, R. W., Booij, E., & Spruit, M. R. 2012), (Lee, S. M., Olson, D. L., & Trimi, S. 2012), and (O'Hern, M. S., & Rindfleisch, A. 2001). By having more information and alternatives where to buy a product or service today's customers take a more active, influential role in the process of value creation forcing firms to step away from their traditional firm-centric view to a more customer-centric view in order to be competitive (Prahalad, C. K., & Ramaswamy, V. 2004), (Sashi, C. M. 2012).

The firm-centric view regards value creation happening inside the firm, ascribing both firm and customer distinct roles as producer and consumer and focusing on "targeting and managing the 'right' customer" (Prahalad, C. K., & Ramaswamy, V. 2004); the customer-centric view suggests firms to collaborate and exchange knowledge with their customers by actively involving them in new product development (NPD) processes in order to create value (Sawhney, M., Verona, G., & Prandelli, E. 2005). Accordingly, customers can actively contribute to successful NPD by being the source of innovative ideas, providing input for new product designs and enhancements, or participating in product testing and support allowing companies to satisfy existing needs that are not met by the market yet (Hoyer, W. D., Chandy, R., Dorotic, M., Krafft, M., & Singh, S. S. 2010), (Nambisan, S. 2002), (Ogawa, S., & Piller, F. T. 2006).

Nowadays, more and more companies are trying to follow the trend to adopt a customer-centric view in order to create and attain value by actively integrating customers in their new product and service development processes.

According to O'Hern, M. S., & Rindfleisch, A. (2001), co-creation can be defined as "a collaborative new product development (NPD) activity in which consumers actively contribute and select various elements of a new product offering". The customer plays a central role in the process of new value creation for the company itself and all its relevant stakeholders (Hoyer, W. D., Chandy, R., Dorotic, M., Krafft, M., & Singh, S. S. 2010). The Internet, as valuable communication medium, especially facilitates co-creation due to its function as interactive platform enabling internals and externals from all over the world to interconnect and collaboratively contribute to an organization's value creation processes (Lee, S. M., Olson, D. L., & Trimi, S. 2012).

An ideal example of integrating customers into their new product and service development activities delivers the American Global Coffee Company Starbucks, which established the online platform MyStarbucksIdea.com on which customer can share their product or experience ideas, participate in open discussions about provided ideas, and vote for them. With the vision of "building it [the Starbucks experience] with them and they are already there" instead of "build it and they will come" the Starbucks Company found a way to keep its customers more loyal while reducing risks in new product or service launch (Ramaswamy, V. 2009). Recently, a reward system for grocery purchase has been introduced labeled as MyStarbucksRewards™. When buying packaged Starbucks coffee in grocery stores customers can find a little sticker with a code pasted on it remunerating them with free drinks or food in Starbucks Coffeehouses. This idea has been suggested by a customer via MyStarbucksIdea.com and aims to successfully contribute to the Starbucks' Customer Loyalty Program.

A key constraint companies face in actively integrating customers in their NPD activities is that co-creation only works when qualified customers are willing to cooperate and openly share their ideas and knowledge with the company as well as honestly evaluating existing products and new ideas (Füller, J., Faullant, R., & Matzler, K. 2010), (Füller, J. 2006). Co-creation happens solely on a voluntary basis and customers are asked to spend time, knowledge and effort in enhancing the quality of existing products as well as providing valuable ideas for new products and services. Respectively, the benefits a company receives from co-creation are clear without

ambiguity. From the customers' perspective the profits they gain as customers are less definitive as they hardly benefit instantly from using the product or service developed (Füller, J. 2006). Whereas recent research has especially focused on the different stages of the product development process at which companies can involve customers as well as the different kinds of benefits customers perceive when participating in co-creation activities, less is known about the different motives customers actually have towards the possibility to participate in online co-creation activities.

Companies specifically rely on customers that are willing to contribute their ideas, thoughts and knowledge to co-creation processes so that new knowledge and value creation can occur as otherwise the concept of co-creation would fail (Füller, J., Bartl, M., Ernst, H., & Mühlbacher, H. 2006), (Nambisan, S. 2002). Therefore, it is necessary for companies to understand how to ensure that their customers are willing and motivated to contribute to co-creation activities online in order to effectively support companies in their value creation processes. This research gap is leading to the following research question: "What are the motivators for customers to participate in online co-creation?"

The objective of this paper is therefore (1) to gain a general insight into customer integration in new product and service development processes and to identify customers' different motives enhancing their willingness to participate in online co-creation activities based on a profound literature review, (2) to develop a pilot questionnaire, which investigates these different motivators positively impacting customers' attitudes towards co-creation, and (3) to test the questionnaire's practicability and provide some suggestions on how the questionnaire can be improved for future studies.

2. Theoretical background

Within the last years, the conventional view of value creation has increasingly been challenged. Whereas prior literature considered value creation to occur exclusively inside organizations and outside markets, recent literature emphasizes the importance of customer integration in value creation processes as efficient way to develop better products while at the same time lowering costs and risks of product/service failure (Fuchs, C., & Schreier, M. 2011), (Prahalad, C. K., & Ramaswamy, V. 2004).

Co-creation is defined as "any act of collective creativity, i.e. creativity that is shared by two or more people" (Sanders E. B.-N., & Stappers, P.J. 2008). Co-creation is interchangeably used with user innovation or co-innovation, which comparably states that costumers are involved in new product development where they act as a source of innovation in order to increase the value of the new product or service (Bogers, M., Afuah, A., & Bastian, B. 2010).

In the beginnings of the era of co-creation, companies started to use a user-centered approach where users are used as subjects that are studied while performing specified tasks and giving feedback. The next step was a participatory approach where users are seen as partners. Users contribute to the development process by providing their expertise and participate already in early design phases (Sanders E. B.-N., & Stappers, P.J. 2008). During co-creation processes, consumers, and not only research and development departments create value (Zwass, V. 2010).

The web plays a significant role in the development of the concept of co-creation. This is because the web opens up the opportunities to involve consumers in product development processes, as it acts as a means of coordination as well as a mean of distribution being widely spread and accessible for many (Zwass, V. 2010).

Co-creation via the web is an upcoming trend. It can also be defined as crowdsourcing, since firms use their consumers (i.e. crowd) to find new solutions or improve existing products or services. An example of that is iStockphoto, which is a picture-sharing platform and marketplace for amateur photographers. Another example is InnoCentive.com which provides a platform for companies to post, mainly scientific, problems and getting different solutions from other community members (Howe, J. 2006).

As especially users' needs, wishes, and preferences impact the concept and design of a product or service it is suggested to already involve customers within the prelaunch phase of a developed product/service, which consists of the following 4 stages: (1) Idea Generation, (2) Concept Development, (3) Product Design and (4) Prototyping/Testing (Kaulio, M. A. 1998), (Mulder, I., & Stappers, P. J. 1997), (Van Kleef, E., Van Trijp, H. C. M., & Luning, P. 2005). At each different stage, value can be created collaboratively as organizations gain insight about customers' preferences and ideas based on interaction and continuous feedback given by the costumers contributes to the development and realization of products or services properly reflecting customers' needs (Mascarenhas, O. A., Kesavan, R., & Bernacchi, M. 2004), (Mulder, I., & Stappers, P. J. 1997), (Romero, D., & Molina, A. 2011).

Segmentation theory adduces that markets are made up of different customer segments each reflecting certain characteristics and needs (Cossio Silva, F.J., Revilla Camacho, M.A., & Vega Vázquez, M. 2013). Respectively, customers might reflect different motives to participate in co-creation activities. Concerning customers' likeliness to engage in organization's co-creation activities, empirical research especially focuses on the different kinds of benefits customers derive from their involvement in co-creation activities functioning as motivators to actively participate. There are two types of benefits to be distinguished promoting customers to participate in co-creation activities, namely extrinsic and intrinsic benefits (Füller, J. 2006).

Whereas extrinsic benefits are focused on the outcomes the customer gains from being innovative e.g. additional bonuses or status enhancement triggering the customer to participate in co-creation activities; intrinsic benefits concentrate on the rewards the customer gets from the activity of being innovative itself stimulating him/her to participate, i.e. satisfaction perceived when generating ideas for new products or the pleasure of learning and sharing with others. Respectively, there are different kinds of motives customers might have when engaging in co-creation processes, for example curiosity about participating, dissatisfaction with existing products, intrinsic interest in co-creation, learning and knowledge-gaining, sharing own ideas or receiving monetary rewards (Füller, J. 2006).

With respect to the online environment the uses and gratifications (U&G) approach seems to be most helpful and relevant to explain the different motives customers present to participate in co-creation activities online. Originally, the U&G approach arose from the functionalist perspective on mass media communication in the 1940's assuming that individuals make use of traditional media channels such as the radio or television in order to fulfill certain wants and needs (Luo, X. 2010), (Urista, M. A., Day, K. D., & Dong, Q. 2008). It aims to identify the different kinds of benefits customers derive from certain media usage and how these obtained benefits affect their media-usage behavior (Nambisan, S., & Baron, R. A. 2009). According to the U&G approach the benefits customers derive from their media usage occur on two basic dimensions, which are the cognitive and the affective dimension. Benefits on the cognitive dimension are related to the benefits customers expect to receive in exchange for their participation; benefits from the affective dimension are related to the positive and negative feelings customers generate during the online interaction with the company, which impact the customers' attitudes and feelings towards the firm (Nambisan, S., & Baron, R. A. 2007), (Urista, M. A., Day, K. D., & Dong, Q. 2008).

Out of these two dimensions the following four types of benefits have been developed (1) learning benefits, which are related to the acquisition of knowledge and gaining an understanding of the environment, (2) social integrative benefits, which are to intensify consumer ties with relevant others, (3) personal integrative benefits, which are to strengthen the customers' own status and self-confidence, and (4) hedonic benefits that enhance aesthetic or pleasurable experiences (Nambisan, S., & Baron, R. A. 2009).

Applying the U&G approach to the Internet as modern medium of communication the different kinds of benefits customers may acquire from their interactions in the online environment can be identified positively impacting customers' participation (Luo, X. 2010), (Nambisan, S., & Baron, R. A. 2007), (Urista, M. A., Day, K. D., & Dong, Q. 2008).

Learning Benefits. By participating in online co-creation activities customers gain deeper insight about a product and its components and enhance their product-knowledge by learning more about the product, its underlying technologies and the usage of the product. This delivers cognitive benefits of information acquisition and product learning to the customer (Hoyer, W. D., Chandy, R., Dorotic, M., Krafft, M., & Singh, S. S. 2010), (Nambisan, S., & Baron, R. A. 2007).

Social Integrative Benefits. Another form of benefit customers might perceive when participating in online co-creation activities stems from the relational and social bonds customers develop while collaboratively developing (new) products and services with other customers and/ or company staff on social media platforms. Due to the close interaction with other individuals customers may develop a sense of belongingness to the online community being involved in the process of co-creation and win some social identity, both being perceived as benefit (Hoyer, W. D., Chandy, R., Dorotic, M., Krafft, M., & Singh, S. S. 2010), (Nambisan, S., & Baron, R. A. 2007), (Nambisan, S., & Baron, R. A. 2009).

Personal Integrative Benefits. Additional, self-efficacy and the pursuit of a certain kind of community status might represent a further type of benefit customers value. When participating in online co-creation processes customers might generate a higher sense of self-efficacy while contributing to a company's innovative processes resulting out of the customer's expansion of product-related knowledge and his/her broadening problem-solving ability. With the delivery of new ideas of high potential the customer might win reputation as well as gaining an expertise-related status of high influence involving enhancement in status, credibility and self-efficacy (Nambisan, S., & Baron, R. A. 2007), (Nambisan, S., & Baron, R. A. 2009).

Hedonic Benefits. Further, customers might perceive the activity of online co-creation as a mentally stimulating experience being interesting, exciting and entertaining, which is thus perceived as a valuable benefit by the customer. Exchanging and discussing new product or service ideas with others and finding solutions for existing problems might be especially delightful for customers and thus stimulating them to participate (Hoyer, W. D., Chandy, R., Dorotic, M., Krafft, M., & Singh, S. S. 2010), (Nambisan, S., & Baron, R. A. 2007), (Nambisan, S., & Baron, R. A. 2009).

3. Research model and hypotheses

Based on the different antecedents derived from the U&G approach a model has been developed, which considers the different motivators that stimulate customers' willingness to participate in the co-creation process of an organization (Figure 1).

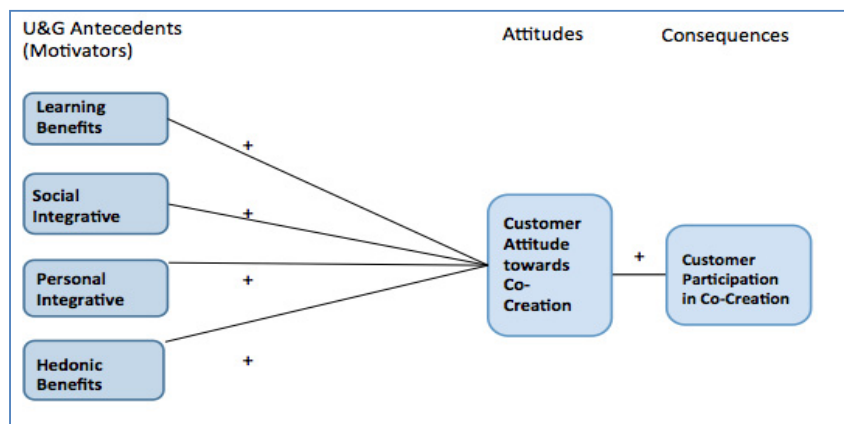


Fig. 1. Model of customers' motivators contributing to a positive attitude towards co-creation

This model represents the starting point for our questionnaire developed as it explains the different types of benefits customers are proposed to perceive when participating in co-creating activities.

In the following, the proposed relationships will be further investigated. It is assumed that customers are motivated to participate in co-creation processes when perceiving that this offers them the possibility to broaden their personal knowledge on the products and its functions as well as learning more about its components and application (Hoyer, W. D., Chandy, R., Dorotic, M., Krafft, M., & Singh, S. S. 2010), (Nambisan, S., & Baron, R. A. 2007) leading to the first hypothesis:

H1: *Learning benefits have a significant and positive effect on the customer's attitude to participate in co-creation.*

The involvement in an organization's co-creation process enables the customer to interact collaboratively with other customers and company staff, who share a common interest in the organization and its products. Thus, customers might identify with the community and feel an interconnection with the other members, regarding this as motivating benefit to participate in co-creation activities (Hoyer, W. D., Chandy, R., Dorotic, M., Krafft, M., & Singh, S. S. 2010), (Nambisan, S., & Baron, R. A. 2007), (Nambisan, S., & Baron, R. A. 2009). The second hypothesis can therefore be formulated as follows:

H2: *Social integrative benefits have a significant and positive effect on the customer's attitude to participate in co-creation.*

With the successful contribution to an organization's (new) product or service development, the customer gets the possibility to raise his reputation towards other customers and the organization itself as well as enlarging his own expertise regarding the (new) product or service offered (Hoyer, W. D., Chandy, R., Dorotic, M., Krafft, M., & Singh, S. S. 2010), (Nambisan, S., & Baron, R. A. 2007). This might trigger the customer's motivation to participate in co-creation resulting in the third hypothesis:

H3: *The personal integrative benefits have a significant and positive effect on the customer's attitude to participate in co-creation.*

Co-creation is a creative process, in which customers are enabled to share their ideas for new products or services as well as making suggestions for improvements. Being involved in a delightful and joyful activity might thus motivate the customer to participate in co-creation (Hoyer, W. D., Chandy, R., Dorotic, M., Krafft, M., & Singh, S. S. 2010), (Nambisan, S., & Baron, R. A. 2007). Accordingly, this leads to the final hypothesis:

H4: *The hedonic benefits have a significant and positive effect on the customer's attitude to participate in co-creation.*

Grounded on the four generated hypotheses stated above a concept questionnaire has been developed through the identification of different profiles of co-creators based on their motivation towards online co-creation and their descriptive criteria.

4. Methodology

4.1. Sample and data collection

To test the applicability of the established concept questionnaire and to identify its strengths and weaknesses a pilot study has been conducted to check which valid data can be derived from it. The concept questionnaire was pre-tested with a sample of 5 respondents in order to ensure that study participants are interpreting the questions as intended (Bowden, A., Fox-Rushby, J. A., Nyandieka, L., & Wanjau, J. 2002). Data was collected within a period of two weeks in May 2013. A total of 239 respondents participated, from which 43% males and 57% females, most of the being in the age of 20-25 years (> 20 years = 8.3%; 25 years < = 19.2%). The sample studied enclosed 226 Europeans and 13 Non-Europeans, the main part of them representing students (86.62%), the rest of them being young professionals (13.38%). Finally, 68 respondents indicated the participation in co-creation activities before, on which the factorial and segmentation analysis have been developed.

The given concept questionnaire has been distributed via different (social) media platforms including Facebook, Twitter and Email to contacts of the researchers. The respondents provided a representative profile of students and young professionals from all over the world all being computer literate and comfortable with social media platforms. The sample can be described as a convenience sample.

The concept questionnaire has been divided up into the following parts: (1) including demographics questions to identify general sample characteristics, (2) including questions considering the reasons for making use of the internet and various social media platforms in general, (3) including questions concerning co-creation activities online in order to identify the reasons of non-co-creators for not participating in innovation processes online and the motivators of co-creators for participating.

It is expected that the four types of U&G antecedents namely learning benefits (H1), social integrative benefits (H2), personal integrative benefits (H3) and hedonic benefits (H4) have a positive effect on customers' attitude to participate in co-creation, in order to obtain different profiles of online co-creators.

4.2. Measurement and methods

The first empirical goal was aimed at observing the existence of similarity of factors between previous studies and our data. For that, the first step consisted in applying an exploratory factor analysis (EFA). To this purpose, principal components analysis (PCA) was run. To operationalize all four suggested types of U&G antecedents semantic differential scale with a 5-point format have been applied ranging from "very important" to "very unimportant". Each construct has been measured by either three or four items adapted from existing scales derived from previous studies. The sequence of all items per construct was randomized to minimize the impact of order bias.

Learning benefits were measured based on a subscale involving three items (product-knowledge enhancement; product-technology enhancement; making better product decisions) suggested by Franke, N., & Shah, S. (2003), Hertel, G., Niedner, S., & Herrmann, S. (2003), and McLure Wasko, M., & Faraj, S. (2000).

Social integrative benefits were measured on a subscale involving four different items (expand social network; status enhancement; strengthening community affiliation; enhancing personal career) derived from Kollock, P. (1999), Hertel, G., Niedner, S., & Herrmann, S. (2003), and McLure Wasko, M., & Faraj, S. (2000).

Personal integrative benefits were measured on a subscale considering three different items (satisfaction derived from influencing product and design; satisfaction derived from influencing product usage; satisfaction derived from making product improvements) suggested by Kollock, P. (1999) and Hertel, G., Niedner, S., & Herrmann, S. (2003). Four financial items (the possibility of earning money directly thanks to the co-creation, contribute in creating cheaper products, enhance the financial position indirectly for people -by buying products offering higher value-, and deliver non-financial rewards -such as receiving product for free, beta products, and so on-) are included within construct.

Finally, based on a subscale considering four different items (enjoyable and relaxing time; fun and pleasure; entertainment and stimulation; enjoyment due to problem-solving and idea generation) the hedonic benefits were measured (Hertel, G., Niedner, S., & Herrmann, S. 2003), (McLure Wasko, M., & Faraj, S. 2000).

Rotated factor scores created during the EFA process were used as variables to develop a latent cluster analysis (Díaz de Rada, V. 1998), (Frías-Navarro, D. & Pascual-Soler, M. 2012). Specifically, a latent segmentation methodology is used to define segmentation and profiling of co-creators based on different motives of participation in online co-creation activities by sample analyzed. This type of procedure allows the assignation of individuals to the segments based on their probability of belonging to the clusters, breaking with the restrictions of deterministic assignment inherent to the non-hierarchic cluster analysis (Dillon, W.R., & Kumar, A. 1994). Thus, individuals are assigned to different segments under the assumption that the data stems from a mixture of distribution probabilities or, in other words, from various groups or homogenous segments that are mixed in unknown proportions (McLachlan, G.J., & Basford, K.E. 1988). The advantage of latent class models is that they allow the incorporation of variables with different measurement scales (continual, ordinal or nominal) (Vermunt, J. K. & Magidson, J. 2005). Based on the positioning of the different individuals, with regard to the

variables, different grouping patterns can be obtained that fulfill the principles of maximum internal coherence and maximum external differentiation. To carry out the latent segmentation, Latent Gold 4.5 statistical software was used. Finally, based on the clusters obtained, we have analyzed the relationship between each activity of co-creation and the correspondence cluster through across-tables and chi-square statistic in order to analyze the significant differences of each co-creation activity and its position in each obtained cluster.

4.3. Factorial analysis: Motives of participation in online co-creation activities

As a first result in the Exploratory Factorial Analysis (EFA), we noticed that the Kaiser-Meyer-Olkin (KMO) is meritorious, i.e. higher than 0.8 (Guttman, L. 1954), and Bartlett's test was highly significant (0.0000), indicating thus that the null hypothesis (i.e. correlation matrix is an identity matrix) is rejected. It shows the validity of factorial analysis model (Bartlett, M. S. 1954), (Kaiser, H. 1970). On the other hand, Cronbach's alpha (Cronbach. 1951) values higher than 0.7 indicate the reliability of the extracted factors. In sum, it is a good model acceptability that allows proceeding running a factor analysis. After factor extraction, an orthogonal varimax rotation was performed on factors with eigenvalues ≥ 1.0 , thus allowing minimizing the number of variables having high loadings on a particular factor.

Four factors resulted from the analysis, accounting for 72.25% of the symptomatic variance whose names are the same that used in U&G Theory (learning, social integrative, personal integrative, and hedonic benefits). The factor structure is consistent because all the variables have a factor loading >0.5 for the factor that they allowed (Hair, J., Anderson, R., Tatham, R., & Black, W. 1999).

4.4. Latent segmentation: A typology of co-creators based on motives of participation in online co-creation activities

Based on pondered average of each factor (calculated through the division between weighting of each item with its standardized load and the sums of the full loadings per factorial construct), we have obtained the indicators variables to analyze them in Latent Gold.

In order to refine the resulting segments, we have analyzed different descriptive variables or covariates that could have an influence on the motives of analyzed sample to participating in co-creations activities: gender, age, nationality, and use of social networking sites.

Based on the positioning of the different individuals, with regard to these variables, we have tried to obtain some groupings that fulfill the principles of maximum internal coherence and maximum external differentiation.

In applying the latent segmentation approach, the first step consists of selecting the optimum number of segments. The model used estimated from one (no heterogeneity existed) up to eight (i.e. eight segments or heterogeneity existed). Table 1 shows the estimation process summary and the fit indexes for each of the eight models.

Table 1. Estimates and fix indexes

Number of conglomerates	LL	BIC(LL)	Npar	Class.Err.	E _s	R ²
1-Cluster	-216.2317	733.6892	77	.0000	1.0000	1.0000
2-Cluster	-117.3402	715.8593	123	.0000	1.0000	1.0000
3-Cluster	-98.8832	858.8984	169	.0000	1.0000	1.0000
4-Cluster	-66.8999	974.8847	215	.0001	.9996	.9998
5-Cluster	-37.1556	1095.349	261	.0000	.9998	.9999
6-Cluster	-31.5015	1263.994	307	.0000	1.0000	1.0000
7-Cluster	-10.9516	1402.847	353	.0001	.9994	.9997
8-Cluster	-5.8578	1572.612	399	.0000	.9998	.9999

LL=log-likelihood; BIC=Bayesian information criterion; Npar=number of parameters; Class.Err.=classification error; E_s= entropy statistic (*entropy R-squared*); R²=Standard R-squared

The model fit was evaluated according to the Bayesian Information Criterion (BIC) that allows the identification of the model with the least number of classes that best fits to the data. The lowest BIC value was considered as the best model indicator (Vermunt, J., & Magidson, J. 2002), (Vermunt, J. K. & Magidson, J. 2005). In this case, two different co-creators groups represented the best alternative, as the BIC is minimized in this case. The statistic values included in Table 4 indicate that the model has a good fit (E_s and R² near 1).

The Wald statistic was analyzed in order to evaluate the statistical significance within a group of estimated parameters (Table 4). For all the indicators a significant p-value associated with the Wald statistics was obtained, confirming that each indicator discriminates between the clusters in a significant way (Vermunt, J. K. & Magidson, J. 2005).

Table 4 also contains the profiles of the obtained clusters. In the upper part the size and name assigned to the four groups is shown: the cluster named “pessimistic residents” includes 58.54% of Valencia residents surveyed; the “optimistic residents” segment 24.53%, and the “skeptical resident” cluster 16.94%.

In addition, Table 2 shows the average score that takes each segment in each of the indicators (note that these can take values between 0 and 5, since items that composed each scale were measured with five-point Likert scales). Clusters are ordered from lowest to highest size of sample according to residents’ opinion about impact of cruise tourism in Valencia in aspects such as environmental, social, economic, and heritage ones.

Table 2. Profile of co-creators (indicators): Motives of participating in co-creation activities

	HIGHLY MOTIVATED CO-CREATORS	LESS MOTIVATED CO-CREATORS	Wald	p-value	R ²
Cluster Size	50.00%	50.00%			
Indicators					
F1- Personal integrative benefits	2.6676	2.4884	14.5703	.00014	.0192
F2- Hedonic benefits	3.6382	3.0410	9.3799	.0022	.1011
F3- Social integrative benefits	2.7959	2.2538	4.1007	.043	.0758
F4- Learning benefits	3.8029	2.5626	19.3978	1.1e-5	.2795
In bold is marked the higher weight obtained by each factor per cluster					

It is relevant to point out that both segments have the same size (50%). Moreover, all factors load in one cluster, which we have named as “highly motivated co-creators” because the mean values are higher in all factors (i.e. satisfaction and enrichment, enjoyment, network with community, and implication with the product). All values are higher than 2.5 (remember that the values go from 1, very unimportant, to 5, very important). It means that all motivated co-creators consider important and very important the participation in online co-creation activities. Specially, they consider more important the hedonic benefits (3.63) and the learning benefits (3.80) when they participate in co-creation. Personal and social integrative benefits as motives to co-create are considered with less value although also important (i.e. 2.66 and 2.79, respectively).

To complement the composition of the two segments, the profile of the resulting groups according to the information from other descriptive variables was analyzed. Table 3 shows the groups’ composition based on a number of descriptive criteria included in the analysis. Independence tests associated with statistic Wald conclude that significant differences exist between the segments (≥90% confidence level) regarding the gender, age, nationality, and use of different social media tools.

Table 3. Profile of co-creators (covariates): Descriptive criteria

DESCRIPTIVE CRITERIA (Covariates)	CATEGORIES	MOTIVATED CO-CREATORS	NON-MOTIVATED COCREATORS	Wald	p-value
Gender	Female	48%	80%	.06201	.043
	Male	52%	20%		
Age	Less than 20 years old	4%	4%	.0490	.094
	Between 20 and 25 years old	64%	76%		
	More than 25 years old	32%	20%		
Nationality	Dutch	40%	8%	3.0355	.055
	German	32%	48%		
	Rest of Europe	20%	24%		
	America	8%	8%		
	Rest of world	0%	12%		
LinkedIn	Have an account and use it regularly	24%	16%	2.6112	.062
	Have an account and use it seldom	24%	24%		
	Don't have an account but know it	28%	32%		
	Don't have an account and don't know it	16%	16%		
Blogger	Have an account and use it regularly	8%	16%	2.8046	.042
	Have an account and use it seldom	28%	32%		
	Don't have an account but know it	0%	0%		
	Don't have an account and don't know it	52%	32%		
wordpress	Have an account and use it regularly	8%	4%	1.5174	.082
	Have an account and use it seldom	16%	8%		
	Don't have an account but know it	40%	32%		
	Don't have an account and don't know it	24%	36%		
YouTube / Vimeo	Have an account and use it regularly	4%	48%	.3331	.095
	Have an account and use it seldom	36%	28%		
	Don't have an account but know it	24%	16%		
	Don't have an account and don't know it	0%	0%		
Social Bookmarking Sites	Have an account and use it regularly	8%	0%	3.0865	.038
	Have an account and use it seldom	32%	24%		
	Don't have an account but know it	0%	0%		
	Don't have an account and don't know it	44%	48%		
Facebook	Have an account and use it regularly	92%	96%	.2223	.089
	Have an account and use it seldom	4%	0%		
	Don't have an account but know it	4%	4%		
	Don't have an account and don't know it	0%	0%		
Twitter	Have an account and use it regularly	20%	36%	208632	.041
	Have an account and use it seldom	36%	0%		
	Don't have an account but know it	40%	48%		
	Don't have an account and don't know it	0%	0%		
Instagram	Have an account and use it regularly	12%	32%	2.5610	.063
	Have an account and use it seldom	24%	4%		
	Don't have an account but know it	48%	32%		
	Don't have an account and don't know it	4%	4%		

In **bold** is marked the higher percentage obtained by each category per cluster

In sum, based on data obtained in Tables 4 and 5, we distinguish two different profiles of co-creators according to our research topic:

The “highly motivated co-creators” cluster presents higher mean in F4-Learning benefits (3.8020) and F2-Hedonic benefits (3.6382). Moreover, this cluster shows relevant mean in F3-Social integrative benefits (2.7959) and F1-Personal integrative benefits (2.6676). This segment is mainly made up by male (80%) and people with more than 25 years old (32%). This segment is composed specially by Dutch co-creators (40%). Respect to the use of social media tools by this group, it is important to point out that these co-creators have an account in LinkedIn and use it regularly (24%); they do not have an account in Blogger and do not know it (52%); the most of people of this group do not have an account in Wordpress but know it (40%); high percentage has an account in YouTube or Vimeo, Social Bookmarking Sites, and Twitter, and uses them seldom (36%, 32%, and 36%, respectively); they do not have an account in Instagram but know it (48%).

In contrast, the “less motivated co-creators” segment presents slower mean in four factors analyzed versus the previous cluster. This segment is composed mainly by female (80%), between 20 and 25 years old (76%). In this segment, the percentage of German, rest of Europe and rest of world are higher than the other cluster. German people are the percentage higher (48%). The 32% of this group do not have an account in LinkedIn but know it. This group has an account in Blogger, and uses it seldom (32%). They do not have an account in Wordpress and do not know it (36%), but in YouTube or Vimeo they have an account and use it regularly (48%). High percentage of this group does not have an account in Social Bookmarking sites (48%). Respect to the other group, this cluster has higher percentage of people with an account in Facebook and use it regularly (96% versus 92%). Near middle of this group does not have an account in Twitter but know it (48%). Compared with previous group, this segment has an account in Instagram, and uses it regularly (32% versus 12%).

5. Conclusion, discussion, and directions for future research

5.1. Main Conclusions

This paper aims to highlight the importance of co-creation for organizations to support them in their value-creation processes well as to test a pilot questionnaire investigating different motivators positively affecting customers to participate in online co-creation activities. It contributes to the existing literature on customer involvement in organization’s value-creation processes in two ways: (1) by identifying the different benefits customers derive from their participation in new product and service development processes in order to co-create value and (2) by making valuable suggestions on how a questionnaire studying customers’ different motives to participate in co-creation activities online should be constructed in order to support future studies.

The Internet as advanced information and communication medium has led to an increased level of customer empowerment making today’s customers more knowing, better-informed and aware of their wishes and needs. This development forces organizations to shift their process of value creation from a firm centric to a customer-centric view closely integrating customers into the value creation processes to co-produce value. Building collaborative network environments with their customers thus enables organizations to improve their competences to perfectly meet their customers’ needs and to stay competitive. Customer involvement is possible at every stage of the NPD process, offering customers the possibility to contribute to value-creation in several ways from generating a new product/service idea to prototype development and testing. Nevertheless, customers first need to be motivated to participate in co-creation activities. Literature findings suggest that customers’ motivation to participate in co-creation is mainly derived from four types of benefits. The results of the tested pilot questionnaire confirmed that these four types of benefits in fact motivate customers to participate in online co-creation activities. Moreover, our research indicated slight differences in motivational levels, yielding to two different profiles of co-creators, namely highly motivated co-creators and less-motivated co-creators. This leads

to the presumption that there might be additional motivators not being covered by our questionnaire impacting motivation as well.

Our findings are consistent with previous work of Nambisan, S., & Baron, R. A. (2009) studying voluntary participation of customers' in virtual customer environments. Their study results support that the four types of benefits derived from the U&G framework have a significant influence on customers' participation in product support in virtual customer environments.

The positive impact of social and hedonic benefits on customers' likeliness to participate in co-creation activities is also in accordance with the findings of Wang, Y., & Fesenmaier, D. R. (2004) studying customers' activities in interactive online travelling communities.

Further, a study conducted by Jeppesen, L. B., & Frederiksen, L. (2006) identifies the recognition from the network community as relevant motivator for individuals to contribute to co-creation processes, which reflects an item counted among social integrative benefits.

5.2. *Discussion and future research*

The distributed questionnaire has been a pilot questionnaire, which is preliminary in nature permitting several improvements.

First, regarding its internal consistency, several types of questions have been used, which complicated the operationalization of the questionnaire. Although the questions with respect to four benefits were operationalized and measured on a consistent scale (5-point semantic differential scale), it was hard to correlate them to the questions regarding customers' attitudes and consequences. Making use of one consistent question type with same levels of measurement facilitates the operationalization of the different concepts considered in the questionnaire.

Second, the motivators included in the questionnaire are solely based on the findings of a literature review evaluating customers' motivations to participate in co-creation activities respective to the benefits they gain out of their participation. Nevertheless, other constructs, which could have an impact on customers' intention to participate are not regarded, e.g. the influence of a individual's social identity within a community evoking a sense of duty to participate Ah(earne, M., Bhattacharya, C. B., & Gruen, T. 2005), (Sicilia, M., & Palazón, M. 2008) or strong brand identification (Stokburger-Sauer, N. 2010).

With respect to its external consistency, a third limitation lies in the considerable low sample size, which prohibits a generalization of the results, as the total potential population of co-innovators is significantly higher. Several limitations also arose from the sample, which had a very low age, represented mostly students and only a quarter of it has actively been contributing to co-creation.

As the questionnaire focused on identifying the different motivators customers have to participate in online co-creation activities, the used sampling technique should be adapted for future research. A sample comprising co-creators only and excluding non-co-innovators is more applicable than the applied sample embracing both as this allows studying the target group. A non-probability sampling technique, e.g. purposive sampling allows to derive a representative sample constituting co-creators only and leaving out non-co-creators. Besides, different age groups and educational levels should be considered, as co-creators can be found in the general population.

The hypotheses derived from the suggested conceptual model were confirmed based on the results provided by the factorial and segmentation analysis. For future research it is recommended to test the model and its underlying hypotheses using the structural equation model, as this technique allows estimating the model fit by testing its underlying causal relationships (De Jonge, J., & Schaufeli, W. B. 1998), (Hooper, D., Coughlan, J., & Mullen, M. 2008).

Moreover, the current questionnaire was limited on identifying the different motives co-creators have to participate in co-creation activities while failing to discover motives, which could tempt non-creators to start involving in co-creation activities.

Furthermore, our questionnaire did not consider which social media platform(s) is/are most suitable for productive co-creation activities online and at which stage of the NPD process customers' prefer to be involved.

Therefore, future research should (1) explain the underlying theory by performing structural equation modeling, (2) examine the deterrents customers have to participate in co-creation activities and if these can and should be overcome, (3) identify social media platforms which are most suitable for collaborative value-creation activities, and (4) find out to which stages of the NPD process customers' are most likely to contribute. The latter aspects (2, 3, 4) are especially of importance for organizations in order to gain an understanding on how they can improve their co-creation activities online to win more motivated customers to collaborate as well as choosing the right platform to successfully reach valuable participants and offering space for valuable results.

References

- Ahearne, M., Bhattacharya, C. B., & Gruen, T. (2005). Antecedents and consequences of customer-company identification: expanding the role of relationship marketing. *The Journal of applied psychology*, 90(3), 574–85.
- Bartlett, M. S. (1954). A note on the multiplying factors for various χ^2 approximations. *Journal of the Royal Statistical Society*, 16(2), 296–298.
- Bogers, M., Afuah, A., & Bastian, B. (2010). Users as Innovators: A Review, Critique, and Future Research Directions. *Journal of Management*, 36(4), 857–875.
- Bowden, A., Fox-Rushby, J. A., Nyandieka, L., & Wanjau, J. (2002). Methods for pre-testing and piloting survey questions: Illustrations from the KENQOL survey of health-related quality of life. *Health Policy and Planning*, 17(4), 402–411.
- Cossío Silva, F.J., Revilla Camacho, M.A., & Vega Vázquez, M. (2013). Heterogeneity of customers of personal image services: A segmentation based on value co-creation. *Int Entrep Manag J*, May. Available at <http://link.springer.com/content/pdf/10.1007%2Fs11365-013-0266-3.pdf>
- Cronbach. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika*, 16(3), 297–334.
- De Jonge, J., & Schaufeli, W. B. (1998). Job characteristics and employee well-being: a test of warr's vitamin model in health care workers using structural equation modelling. *Journal of Organizational Behavior*, 19(September 1996).
- Díaz de Rada, V. (1998). Diseño de tipologías de consumidores mediante la utilización conjunta del Análisis Cluster y otras técnicas multivariantes [Design of typologies of consumers through the use of cluster analysis and other multivariate techniques]. *Economía Agraria*, 182(enero-abril), 75–104.
- Dillon, W.R. & Kumar, A. (1994). Latent structure and other mixture models in marketing: An integrative survey and overview. In R.P. Bagozzi (Ed.), *Advanced Methods of Marketing Research* (pp. 259-351), Blackwell Business, Cambridge.
- Franke, N., & Shah, S. (2003). How communities support innovative activities: an exploration of assistance and sharing among end-users. *Research Policy*, 32(1), 157–178.
- Frías-Navarro, D. & Pascual-Soler, M. (2012). Prácticas del análisis factorial exploratorio (AFE) de la investigación sobre la conducta del consumidor y el marketing [Practiques of exploratory factorial analysis (EFA) in the research on consumer behavior and marketing]. *Suma Psicológica*, 19(enero-junio). Available at http://www.sci.unal.edu.co/scielo.php?script=sci_arttext&pid=S0121-43812012000100004&lng=es&nrm=iso
- Fuchs, C., & Schreier, M. (2011). Customer empowerment in new product development. *Journal of Product Innovation Management*, 28(1), 17–32.
- Fuller, J. (2006). Why consumers engage in virtual new product developments initiated by producers. *Advances in Consumer Research*, 33, 639–646.
- Füller, J., Bartl, M., Ernst, H., & Mühlbacher, H. (2006). Community based innovation: How to integrate members of virtual communities into new product development. *Electronic Commerce Research*, 6(1), 57–73.
- Füller, J., Faullant, R., & Matzler, K. (2010). Triggers for virtual customer integration in the development of medical equipment — From a manufacturer and a user's perspective. *Industrial Marketing Management*, 39(8), 1376–1383.
- Guttman, L. (1954). *Mathematical thinking in the social sciences*. New York, NY, US: Free Press, 258–348.
- Hair, J., Anderson, R., Tatham, R., & Black, W. (1999). *Multivariate analysis*. Paper presented at Prentice-Hall, Madrid.
- Helms, R. W., Booi, E., & Spruit, M. R. (2012). Reaching out: Involving user in innovation tasks through social media. Paper presented at the ECIS 2012, Barcelona, Spain.
- Hertel, G., Niedner, S., & Hermann, S. (2003). Motivation of software developers in open source projects: An internet-based survey of contributors to the linux kernel. *Research Policy*, 32(7), 1159–1177.
- Hooper, D., Coughlan, J., & Mullen, M. (2008). Structural equation modelling: Guidelines for determining model fit. *The Electronic Journal of Business Research Methods*, 6(1), 53–60.
- Howe, J. (2006). The rise of crowdsourcing. *Wired magazine*, 14, 1–5.
- Hoyer, W. D., Chandy, R., Dorotic, M., Krafft, M., & Singh, S. S. (2010). Consumer cocreation in new product development. *Journal of Service Research*, 13(3), 283–296.

- Jeppesen, L. B., & Frederiksen, L. (2006). Why do users contribute to firm-hosted user communities? The case of computer-controlled music instruments. *Organization Science*, 17(1), 45–63.
- Kaiser, H. (1970). A second generation little jiffy. *Psychometrika*, 35(4), 401–415.
- Kaulio, M. A. (1998). Customer, consumer and user involvement in product development: A framework and a review of selected methods. *Total Quality Management*, 9(1), 141–149.
- Kollock, P. (1999). The economies of on-line cooperation: Gifts, and public goods in cyberspace. *Communities in Cyberspace* (pp. 220–239).
- Lee, S. M., Olson, D. L., & Trimi, S. (2012). Co-innovation: convergenomics, collaboration, and co-creation for organizational values. *Management Decision*, 50(5), 817–831.
- Luo, X. (2010). Uses and gratifications theory and e-consumer behaviors: A structural equation modeling study. *Journal of Interactive Advertising*, 2(2), 34–41.
- Mascarenhas, O. A., Kesavan, R., & Bernacchi, M. (2004). Customer value-chain involvement for co-creating customer delight. *Journal of Consumer Marketing*, 21(7), 486–496.
- McLachlan, G.J., & Basford, K.E. (1988). *Mixture Models: Inference and Applications to Clustering*, Marcel Dekker, New York.
- McLure Wasko, M., & Faraj, S. (2000). “It is what one does”: why people participate and help others in electronic communities of practice. *The Journal of Strategic Information Systems*, 9(2-3), 155–173.
- Mulder, I., & Stappers, P. J. (1997). Co-creating in practice: results and challenges. Presented at the 15th International Conference on Concurrent Enterprising: ICE 2009.
- Nambisan, S. (2002). Designing virtual customer environments for new product development: Toward a theory. *The Academy of Management Review*, 27(3), 392–413.
- Nambisan, S., & Baron, R. A. (2007). Customer environments: Relationship management. *Journal of Interactive Marketing*, 21(2), 42–62.
- Nambisan, S., & Baron, R. A. (2009). Virtual customer environments: Testing a model of voluntary participation in value co-creation activities, (518), 388–406.
- O’Hern, M. S., & Rindfleisch, A. (2001). Customer co-creation: A typology and research agenda (pp. 84–106).
- Ogawa, S., & Pillar, F. T. (2006). Reducing the risks of new product development. *MIZSloan Management Review*, 47(2), 65–71.
- Prahalad, C. K., & Ramaswamy, V. (2004). Co-creation experiences: The next practice in value creation. *Journal of Interactive Marketing*, 18(3), 5–14.
- Ramaswamy, V. (2009). Co-creation of value: Towards an expanded paradigm of value creation. *Marketing Review St. Gallen*, 6, 11–17.
- Romero, D., & Molina, A. (2011). Collaborative networked organisations and customer communities: value co-creation and co-innovation in the networking era. *Production Planning & Control*, 22(5-6), 447–472.
- Sanders E. B.-N., & Stappers, P.J. (2008). Co-creation and the new landscapes of design, *CoDesign*, 4(1), 5–18.
- Sashi, C. M. (2012). Customer engagement, buyer-seller relationships, and social media. *Management Decision*, 50(2), 253–272.
- Sawhney, M., Verona, G., & Prandelli, E. (2005). Collaborating to create: The internet as a platform for customer engagement in product innovation. *Journal of interactive marketing*, 19(4), 1–15.
- Sicilia, M., & Palazón, M. (2008). Brand communities on the internet: A case study of coca-cola’s spanish virtual community. *Corporate Communications: An International Journal*, 13(3), 255–270.
- Stokburger-Sauer, N. (2010). Brand Community: Drivers and Outcomes. *Psychology & Marketing*, 27, 347–368.
- Urista, M. A., Day, K. D., & Dong, Q. (2008). Explaining why young adults use myspace and facebook through uses and gratifications theory. *Human Communication*, 12(2), 215–229.
- Van Kleef, E., Van Trijp, H. C. M., & Luning, P. (2005). Consumer research in the early stages of new product development: a critical review of methods and techniques. *Food Quality and Preference*, 16(3), 181–201.
- Vermunt, J. K. & Magidson, J. (2005). *Latent GOLD 4.0 User’s Guide*, Statistical Innovation, Inc, Belmont, Massachusetts.
- Vermunt, J., & Magidson, J. (2002). Latent class cluster analysis. *Applied latent class analysis*, 89–106.
- Wang, Y., & Fesenmaier, D. R. (2004). Towards understanding members’ general participation in and active contribution to an online travel community. *Tourism Management*, 25(6), 709–722.
- Zwass, V. (2010). Co-Creation: Toward a Taxonomy and an Integrated Research Perspective. *International Journal of Electronic Commerce*, 15(1), 11–48.