Innovating with customers online: A comparative study of European customers' motives to co-create

1. Introduction

Customer participation in new product and service development is an established practice among marketers and is an important and promising approach in the innovation domain (Fitzsimmons, 1985; Prahalad & Ramaswamy, 2004; Ramaswamy, 2005; von Hippel, 2005). Co-creation, which is defined as 'the creation of a partnership between companies and/or institutes and/or customers on sharing knowledge, costs and benefits in order to create unique value for the customer' (van Blokland & Santema, 2006), is viewed as a means to effectively tap into the collective intelligence of consumers (Malone et al., 2010). Terms synonymous with 'co-creation' include 'crowdsourcing', 'collaborative innovation', 'co-innovation' and 'Virtual Customer Integration' /VCI (Füller et al., 2010), and these terms are based on the premise that the final customer is a co-creator of value (Prahalad & Ramaswamy, 2004; Lusch et al., 2007).

The development of the Internet and in particular the emergence of the interactive Web – widely known as Web 2.0 or social media – has added a new dimension to co-creation interactions and has presented businesses with the opportunity to recruit co-creating customers much more easily, cheaply and on a global scale (Constantinides et al., 2008). Online co-creation platforms can operate as continuous platforms of co-creation, but interaction with innovative customers can also be incidental, such as in the form of quizzes or challenges.

Successful examples of online co-creation can be found in almost any business category. However, despite positive experiences, the broader adoption of online co-creation as a business practice has been relatively slow (Zwartjes, 2011). A study by the McKinsey Global Institute (McKinsey Global Institute, 2011) showed that 'just 3% of companies are fully networked and use social media to interact with customers, partners and employees'.

Open Innovation and co-creation in traditional market settings are topics frequently discussed in the literature s mentioned earlier; yet little attention has been paid to open innovation and customer co-creation in online settings. Some attention on this issue has been paid in the case of Free Open Source Software (F/OSS) such as Apache, Linux and Mozilla (Fielding, 1999; Halloran

& Scherlis, 2002; Nakakoji et al., 2002) and Rohrbeck, Hölzle & Gemünden (2009) described how Deutsche Telekom created an online open innovation ecosystem.

Finding and attracting the innovation-minded potential co-creation partners is one of the main challenges of co-creation trajectories but research about expectations and motives of innovation-minded customers is limited. According to Füller (2010) "Little is known about … how are consumers' expectations affected by their motivations and how does one's personality affect those motives?"

The objective of this study is to identify and classify the profiles of innovative co-creating consumers in two EU countries, the Netherlands and Spain, and compare their motivations to participate in online innovation activities. The countries in question have different cultural backgrounds and characteristics (Hofstede, 1980, 2001) and have shown different rates of adoption of the Internet technology. The Netherlands is one of the top countries in Europe and worldwide in terms of Internet and social media penetration, while Spain is a country with a lower adoption and lower usage rates of the Internet (Eurostat, 2016)[1]. Previous studies comparing the online behavior of the same two countries found no substantial differences in the online behavior of the residents of these two culturally diverse countries as consumers. The central question this study will address is whether different cultural characteristics have an effect on attitudes of Dutch and Spanish people as potential innovators in online co-creation processes.

2. Literature review

Co-creation and active involvement of the customer in innovation trajectories is a solution to the problem of the need of businesses to innovate faster, cheaper and more efficiently as a way to maintain their competitiveness. Globalization, deregulation, outsourcing, and the convergence of industries and technologies have been identified (Ramaswamy, 2005) as barriers that prevent companies from differentiating themselves from the competition in today's market settings. In addition, the posture of the customer has been transformed: from isolated to connected, from unaware to informed, from passive to active (Prahalad & Ramaswamy, 2004). Increasing customer empowerment and difficulty in differentiating their offer are forcing businesses to seek active

[1] Eurostat Internet Access and use statistics households and individuals http://ec.europa.eu/eurostat/statistics-explained/index.php/Internet_access_and_use_statistics_-_households_and_individuals#Main_statistical_findings

collaborations with users in a manner that makes it possible to identify their dormant needs (Lusch et al., 2007). The benefits can be substantial, and co-creation is a potential new source of competitive advantage: Lower R&D costs, shorter time to market and greater chances of product success are also important advantages of the increasing customer empowerment through involvement in innovation processes (Kleemann et al., 2008).

2.1. The social media as interaction platforms

A variety of social media platforms that have been adopted by Internet users worldwide as social networking and communication platforms. Online interactions underpin the virtual customer integration concept (Chesbrough, 2003b; Whelan et al., 2010), involving online customers in every stage of the NPD while also tapping into their knowledge, creativity and judgment (Füller et al., 2010). With increasing direct customer involvement, manufacturers can benefit from interactions taking place in customer forums, social networks and online communities (Chang et al., 2015) where customers share information, ideas and suggestions (von Hippel, 2005).

2.2. Motivators: the uses and gratifications theory

Understanding customer motives for participating in virtual co-creation projects is a vital step in recruiting and selecting the right type of customers. Hoyer et al. (2010) identify three levels of co-creation antecedents: consumer-level motivators, firm-level impediments, and firm-level stimulators. Füller et al. (2010) indicate that financial or other types of compensation are relatively weak triggers for participation in co-creation activities; the desire for product improvements, interest in innovation, pursuit of knowledge and willingness to help companies are the main sources of motivation. Consumers participating in co-creation processes often want to test their competence and their self-marketing, and they use core competences to obtain an advantage in addressing a challenge; in addition, consumers like to observe the new concepts proposed by other community members (Zwartjes, 2011).

The factors motivating consumers to participate in co-creation processes are cognitive, social integrative, personal integrative and hedonic (Nambisan & Baron, 2009) and financial (Hoyer et al., 2010). Often, customers expect to be recognized for their co-creation contributions (Xia & Suri, 2014), thus improving their reputation and career prospects in addition to helping to recruit new clients (Franke & Shah, 2003; Hoyer et al., 2010). Consumer-level variables that are likely to

act as motivators in this study are classified into four categories: financial, social, technical and psychological factors.

Applied to mass media communications (Katz et al., 1974) and new electronic communications tools (Urista et al., 2008), the Uses and Gratifications theory (U&G) provides a framework of motivators based on a functionalistic perspective on mass media communications as a means to explain user motivations and associated behaviour.

Many communication researchers consider the Internet a continuum between mass and interpersonal communication. Eighmey & McCord (1995) drew on the U&G perspective to examine the audience experience associated with websites. U&G helps illuminate the Internet as a broad range of communication opportunities by 'laying out a taxonomy of just what goes on in cyberspace' (Newhagen & Rafaeli, 1996). Ruggiero (2000) asserts that the emergence of computer-mediated communication revived the significance of U&G. Within this context, researchers have analyzed U&G theory with respect to the use of mobile (Leung & Wei, 2000). The U&G approach may well play a major role in answering initial web-use questions of curiosity, profit seeking, and sociability (Luo, 2002). Zolkepli & Kamarulzaman (2015) tested the relationship between the U&G of social media while considering the mediating effect of innovations in social media. The findings suggest that social media adoption is significantly driven by three types of needs, i.e., 'personal needs, social needs and the need for tension release'. These needs are motivated by the innovation characteristics of social media and increase the likelihood of adoption.

Drawing on previous studies on motivational factors that applied U&G theory to e-consumers (Luo, 2002; Urista et al., 2008) and co-creators (Nambisan & Baron, 2009; Xia & Suri, 2014), we analyzed the profile of co-creators in two different countries. The U&G framework limits the range of motivators to the previously mentioned four variables, reflecting the benefits that customers may acquire from their interactions in the online environment by positively impacting customer value perceptions (Nambisan & Baron, 2007; Urista et al., 2008). This approach has been used to determine the motives for interest in and adoption of new technologies (Katz et al., 1974); however, it has thus far not been used to determine the motivation for co-creation.

3. Problem formulation

3.1. Research questions

Participating in online co-creation activities allows customers to gain deeper insights about a product; thus, the product experience is enhanced by the increase in knowledge about the product

and its underlying technologies and usage. The process of learning offers cognitive benefits to the customer (Luo, 2002; Nambisan & Baron, 2009; Hoyer et al., 2010; Blasco et al., 2014). It is assumed that customers are motivated to participate in co-creation processes once it is understood that participation offers the possibility of broadening their knowledge of the product as well as its functions, components and applications. This leads to the first research question:

RQ1: *Are the benefits derived from learning about a product a significant source of motivation to engage in online co-creation on social media platforms?*

Social integrative benefits. Involvement in the co-creation process of a business enables the customer to interact collaboratively with other customers and company staff. Thus, customers might identify themselves with the community and feel a connection with other members, motivating such customers to participate in co-creation activities (Luo, 2002; Kristensson et al., 2008; Nambisan & Baron, 2009; Hoyer et al., 2010; Blasco et al., 2014). The second research question can therefore be formulated as follows:

RQ2: *Are the benefits of social integration significant as a motivation to engage in online co-creation on social media platforms?*

Having made a successful contribution to developing an organization's (new) product or service, the customer has the opportunity to improve his/her reputation with other customers and within the organization itself in addition to increasing his expertise regarding the (new) product or service (Vargo et al., 2008; Nambisan & Baron, 2009; Hoyer et al., 2010). This might increase the customer's motivation to participate in co-creation and leads to the third research question:

RQ3: *Are the personal integrative benefits significant as a motivation to engage in online co-creation on social media platforms?*

Co-creation is a creative process; customers are able to share ideas for new products or services and make suggestions for improvements. Involvement in a delightful and joyful activity might motivate the customer to participate in co-creation (Nambisan & Baron, 2009; Hoyer et al., 2010; Blasco et al., 2014). Accordingly, this leads to the following research question:

RQ4: *Are hedonic benefits significant as a motivation to engage in online co-creation on social media platforms?*

Consumers in the Netherlands and Spain are avid users of the social Web, although there are differences in the overall penetration of the Internet in the two countries. The main differences between these two countries are the degree of individualism, power distance and uncertainty

avoidance (Grande, 2004). According to Eurostat (2013), 92% of the Dutch and 66% of the Spanish population are regular (i.e., at least once daily) users of the Internet. In terms of social media adoption, the differences between the two countries are much smaller. In December 2012, 85.1% of Dutch Internet users and 84.6% of Spanish Internet users were also social web users, levels in Spain having increased by 11.3% from the previous year; the number of users in the Netherlands did not increase substantially in the same period (ComScore Data Mine, 2013). Additionally, Spanish people spend much more time using social media tools, regardless of age, than do Dutch users (ComScore Data Mine, 2012).

The cultural differences between the two countries (Hofstede, 2016) justify the comparison of their respective online co-creation motives, and the logical assumption is that motives will differ as a result of cultural dissimilarities. Possible differences between both countries will be analyzed, and the different behavioral patterns within each country will also be identified (i.e., heterogeneity or homogeneity among the users in each country). In sum, based on the culture and technology habits of both countries, we propose the following research question:

RQ5: *Are the co-creators on social media platforms in both countries homogeneous?*

3.2. Methodology

3.2.1. Sample and data collection

To test the applicability of the established concept in online co-creation processes and to identify its strengths and weaknesses, a survey was conducted. The questionnaire was pre-tested with a sample of 5 respondents in each country to ensure that participants understood and interpreted the questions as intended (Bowden et al., 2002). The final data were collected within a two-week period in November 2013 (the Netherlands) and March 2014 (Spain). The questionnaire explicitly asked the participants about participating in co-creation in social media environments.

In the Netherlands, a total of 239 respondents participated, 43% male and 57% female, most of them between the ages of 20 and 25 (> 20 years = 8.3%; 25 years < = 19.2%). The sample included 226 Europeans and 13 non-Europeans, the majority being students (86.62%) and the rest being young professionals (13.38%). 68 respondents (i.e., 28.4%) confirmed full participation in all social media co-creation activities that were proposed.

In Spain, a total of 334 respondents participated in the survey, 47% male and 53% female; most of them were between the ages of 18 and 24 (27.2%) and 40 and 54 years old (22.9%). 136 respondents (i.e., 40.7%) indicated full participation in all co-creation activities that were

proposed. The data from participants with earlier experience in online co-creation projects in both countries were analyzed, and a factorial and latent segmentation analysis was performed.

In both cases, convenience sampling was applied as the sampling method. The questionnaire was distributed through the researchers' social networks, e.g., Facebook, Twitter and LinkedIn, and also by email. The questionnaire was made available to respondents on the online survey platform SurveyMonkey®. Participants were familiar with the Internet environment and should ideally have been in different age categories. The sample is a convenience sample, and in this sense, the findings cannot be generalized to the total population in any of the countries in question. They are, however, representative of the population sharing the sample characteristics in the two countries. From a statistical perspective, as explained in section 5.1, both samples showed a consistent and reliable structure due to the acceptance of the statistical indicators (Cronbach's Alfa > .7; factor loading < .5; (Cronbach, 1951; Hair et al., 1998)). Moreover, to analyze the validity of the results, the sample (per each country) was separated into two halves, and a factorial analysis was randomly performed for each sample. As the analysis of the loadings does not differ substantially (for each country separately), we can conclude that the results are robust and stable (Hair et al., 1995).

The questionnaire was divided into the following parts: (1) demographics questions meant to identify general sample characteristics; (2) questions considering the reasons for making use of the Internet and various social media platforms in general; (3) questions concerning online co-creation activities, which are an attempt to identify the reasons that non-co-creators do not participate in online innovation processes and co-creators do participate in them.

As well as being a means to compare the possible homogeneity or heterogeneity of online co-creators in both countries (RQ5), the four types of U&G Theory antecedents – namely, learning benefits (RQ1), social integrative benefits (RQ2), personal integrative benefits (RQ3) and hedonic benefits (RQ4) – were expected to account for the significant motivators of online co-creators to define their profile.

3.2.2. Measurement and methods

The first empirical goal was to observe any similarities between the factors in previous studies and those in our data. Therefore, the first step consisted in applying exploratory factor analysis (EFA) with SPSS® statistical software. Principal components analysis (PCA) was performed on both databases (the Netherlands and Spain). To operationalize the four constructs of U&G Theory

(Luo, 2002; Nambisan & Baron, 2009), a semantic differential scale with a 5-point format was applied ranging from 'strongly disagree' to 'strongly agree'. Each construct was measured by either three or four items adapted from existing scales from previous studies.

The sequence of all items per construct was randomized to minimize the impact of order bias. Specifically:

Learning benefits (RQ1) were measured based on a subscale involving three items (product-knowledge enhancement; product-technology enhancement; making better product decisions) suggested by (McLure Wasko & Faraj, 2000; Franke & Shah, 2003; Hertel et al., 2003).

Social integrative benefits (RQ2) were measured on a subscale involving four items (expansion of social network; status enhancement; strengthening community affiliation; enhancing personal career) derived from (Kollock, 1999; McLure Wasko & Faraj, 2000; Hertel et al., 2003).

Personal integrative benefits (RQ3) were measured on a subscale based on three items (satisfaction derived from influencing product and design; satisfaction derived from influencing product usage; satisfaction derived from making product improvements) suggested by Hertel et al. (2003) and Kollock (1999). Four financial items (the possibility of earning money from co-creation, contributing by making products cheaper, indirectly enhancing the financial position of others by increasing product value, and non-financial rewards, e.g., free products and beta products) are included within the construct.

Hedonic benefits (RQ4) based on a subscale involving four items (enjoyment and relaxation; fun and pleasure; entertainment and stimulation; pleasure derived from problem-solving and idea generation) were measured (McLure Wasko & Faraj, 2000; Hertel et al., 2003).

Based on rotated factor scores created during the EFA process, the weighted average of factor items was used as a variable to develop a latent cluster analysis (Diaz de Rada, 1998; Frías-Navarro & Soler, 2012). Specifically, a latent segmentation methodology was used to define segments and profiles of co-creators in both samples based on different motives for participation in online co-creation activities. This type of procedure makes it possible to assign individuals to segments based on their probability of belonging to the clusters, thus breaking with the restrictions of deterministic assignment that are inherent in non-hierarchic cluster analysis (Dillon & Kumar, 1994). Thus, individuals are assigned to different segments under the assumption that the data stems from a mixture of distribution probabilities – that is, various groups or homogenous segments that are mixed in unknown proportions (McLachlan & Basford, 1988). The advantage of latent class

models is that they allow the incorporation of variables with different measurement scales (continual, ordinal or nominal; Vermunt & Magidson, 2005). Based on the positioning of the different individuals with regard to the variables, different grouping patterns can be obtained that fulfil 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 analyzed the relationship between each co-creation activity and the corresponding cluster using the Wald statistic to take into account the possible significant differences of each co-creation activity and its position in each obtained cluster.

4. Problem solution

4.1. Factorial analysis for Dutch and Spanish samples: motives for participation in online co-creation activities

In terms of the first result of Exploratory Factorial Analysis (EFA), we noted that for both samples, the Kaiser-Meyer-Olkin (KMO) was meritorious, i.e., higher than 0.8 (Guttman, 1954), and Bartlett's test was highly significant (0.0000); thus the null hypothesis (i.e., the correlation matrix is an identity matrix) was rejected. This demonstrates the validity of the factorial analysis model for both samples (Bartlett, 1954; Kaiser, 1970).

Moreover, to determine whether our data are robust, the sample (for each country) is separated into two halves, and factorial analysis is performed. As the analysis of the loadings does not differ substantially (per country, separately), we can affirm the validity of the results; i.e., they are robust and stable (Hair et al., 1995).

In addition, the Cronbach's Alpha (1951) values are higher than 0.7 for both countries, indicating the reliability of the extracted factors. In sum, the model is acceptable for both samples, and we therefore proceed with factorial analysis. After factor extraction, an orthogonal Varimax rotation was performed on factors with engine values ≥ 1.0, thus minimizing the number of variables with high loadings on a particular factor.

For both samples, four factors resulted from the analysis of the symptomatic variance, accounting for 72.25% of variance in the Netherlands and 60.07% of variance in Spain. The names established for these factors are similar to those used in U&G theory (Luo, 2002; Nambisan & Baron, 2009): F1-general integrative, F2-enjoyment or financial, F3-network with community, and F4-product knowledge benefits.

Items (I) about motives of participation **in co-creation**	**Factor 1: General Benefits**		**Factor 2: Enjoyment (NL) or financial Benefits (SP)**		**Factor 3: Network with community Benefits**		**Factor 4: Product knowledge Benefits**	
	NL	**SP**	**NL**	**SP**	**NL**	**SP**	**NL**	**SP**
I1-Enhance my knowledge about the product and their usage							.724	.805
I2-Enhance my knowledge on product trends, related products and technology							.725	.811
I3-Help me make better product decisions as consumer							.578	.739
I4-Expand my personal network					.686	.740		
I5-Release my status/reputation as product expert in my personal network					.864	.827		
I6-Enhance the strength of my affiliation with the customer community					.619	.772		
I7-Are likely to positively affect my professional career	.704	.398						
I8-Offer me satisfaction from influencing product design and development	.651	.813						
I9-Offer me satisfaction from influencing product usage by other customers	.530	.667						
I10-Offer me satisfaction from helping design better products	.711	.721						
I11-Contribute in spending some enjoyable and relaxing time		.563	.766					
I12- Contribute in fun and pleasure		.618	.815					
I13-Entertain and stimulate my mind		.635	.832					
I14-Offer me enjoyment deriving from problem solving, ideas generation, etc.		.509	.753					
I15-Earn me money directly	.662			.782				
I16-Contribute in creating cheaper products	.699			.674				
I17-Enhance my financial position indirectly (e.g. by buying products offering higher value)	.600			.800				
I18-Deliver non-financial rewards (receiving product for free, beta products, etc.)	.717			.712				
% Variance explained	46.99%	32.14%	11.16%	11.02%	8.29%	8.05%	5.79%	8.85%
% Cumulative variance	46.99%	32.14%	58.15%	43.16%	66.45%	51.21%	72.25%	60.07%
Cronbach's Alpha	**.878**	**.836**	**.914**	**.780**	**.812**	**.763**	**.843**	**.816**

THE NETHERLANDS	SPAIN
KMO (Kaiser-Meyer-Olkin): .836	KMO (Kaiser-Meyer-Olkin): .802
Barlett Sphericity: Sig. .000	Barlett Sphericity: Sig. .000
Chi-Square: 611.899 (df: 153)	Chi-Square: 1059.863 (df: 153)

Table 1. Factor loading EFA: the Netherlands (NL) versus Spain (SP).

For both countries, the factorial structure is consistent because all variables have a factor loading >.5 for the factor that they allowed (Hair et al., 1998), as shown in Table 1.

The main results of factorial analysis are shown in Table 1; the convergences between F3 (network with community benefits) and F4 (product knowledge benefits) are apparent. In both countries, the same items compose these factors. Nevertheless, in the case of F1 and F2, we can see some divergence. In the case of F1 (general benefits), the items for the Netherlands group are related to satisfaction and enrichment, while those for the Spain groups are related to satisfaction and enjoyment. On the other hand, F2 (enjoyment or financial benefits) is structured differently with respect to the two countries: The Netherlands includes hedonic variables (i.e., enjoyment benefits), and Spain includes enrichment variables (i.e., financial benefits).

4.2. Latent segmentation in two European countries: a typology of co-creators based on motives for participation in online co-creation activities

Based on the pondered average of each factor (calculated by the division of the weighting of each item with its standardized load by the sums of the full loadings per factorial construct), we obtained the indicator variables.

To refine the resulting segments, we analyzed different descriptive variables or covariates that could have an influence on the motives of the sample: gender, age, nationality, and use of social networking sites (Table 2).

VAR	ITEMS MEASURED	CATEGORIES
I	Motives of participation in co-creations:	
N		
D	F1- General Benefits	Strongly disagree
I	F2- Enjoyment (NL) or Financial Benefits (SP)	Disagree
C	F3- Network with Community Benefits	Neither disagree nor agree

A	F4- Product Knowledge Benefits	Agree
T		Strongly agree
O		
R		
S		
	Gender	Female
		Male
C		Less than 20 years old
O	Age	Between 20 and 25 years old
V		More than 25 years old
A	**Use of Social Media tools:**	
R		
I	LinkedIn	
A	Blogger/Wordpress (blogs)	Have an account and use it regularly
T	YouTube/VIMEO (video)	Have an account and use it seldom
E	Social bookmarking sites (e.g: Delicious)	Don't have an account but know it
S	Facebook	Don't have an account and don't know
	Twitter	
	Instagram (photo)	

Table 2. Measured variables: Indicators and covariates.

Based on the positioning of the different individuals, with regard to the previous variables (Table 2), we have tried to obtain some groupings that fulfil the principles of maximum internal coherence and maximum external differentiation.

The first step of the latent segmentation approach consists of selecting the optimum number of segments. The model is estimated from one (no heterogeneity present) to eight (i.e., eight segments or heterogeneity is present). Table 3 shows the summary of the estimation process and the fit indexes for each of the eight models.

Number of	LL		BIC(LL)		Npar		Class.Err.		E_s		R^2	
conglomerates	NL	SP	NL	SP	NL	SP	NL	SP	NL	SP	NL	SP
1-Cluster	-216.2317	-413.0483	733.6892	1315.267	77	102	.0000	.0000	1.0000	1.0000	1.0000	1.0000
2-Cluster	**-117.3402**	**-322.2244**	**715.8593**	**1311.063**	**123**	**139**	**.0000**	**.0062**	**1.0000**	**.9628**	**1.0000**	**.9747**
3-Cluster	-98.8832	-270.1752	858.8984	1384.409	169	176	.0000	.0021	1.0000	.9895	1.0000	.9933
4-Cluster	-66.8999	-220.2719	974.8847	1462.047	215	213	.0001	.0033	.9996	.9904	.9998	.9919
5-Cluster	-37.1556	-192.8670	1095.349	1584.681	261	250	.0000	.0006	.9998	.9977	.9999	.9984
6-Cluster	-31.5015	-155.6010	1263.994	1687.594	307	287	.0000	.0009	1.0000	.9971	1.0000	.9979
7-Cluster	-10.9516	-119.2523	1402.847	1792.340	353	324	.0001	.0003	.9994	.9988	.9997	.9993
8-Cluster	-5.8578	-79.5424	1572.612	1890.365	399	361	.0000	.0008	.9998	.9977	.9999	.9982

LL=log-likelihood; BIC=Bayesian information criterion; Npar=number of parameters; Class.Err.=classification error; E_s= entropy statistic (*entropy R-squared*); R^2=Standard R-squared

Table 3. Estimates and fix indexes: The Netherlands versus Spain.

The model fit was evaluated according to the Bayesian Information Criterion (BIC), which makes it possible to identify the model with the least number of classes that best fits the data. The lowest BIC value was considered the best model indicator (Vermunt & Magidson, 2002, 2005). In this case, two co-creator groups represented the best alternative, as the BIC is minimized in this case. The statistic values included in Table 3 indicate that the model has a good fit (Es and R2 near 1).

The Wald statistic was analyzed to evaluate the statistical significance within a group of estimated parameters (Table 3). 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 & Magidson, 2005).

Table 4 also contains the profiles of the clusters obtained. In the upper part, the size and name assigned to the two groups is shown: The cluster named highly motivated co-creators includes 50% of Dutch co-innovators and 65.50% of Spanish co-innovators; the less motivated co-creator segment includes 50% of Dutch co-innovators and 34.50% of Spanish co-innovators.

	HIGH MOTIVATED		LOW MOTIVATED		Wald		p-value	
	NL	**SP**	**NL**	**SP**	**NL**	**SP**	**NL**	**SP**
Cluster Size	50.00%	65.50%	50.00%	34.50%				
Indicators								
F1-General benefits	**2.6676**	**3.8208**	2.4884	3.4243	14.5703	2.0103	.00014	.016
F2- Enjoyment or financial benefits	**3.6382**	**3.1993**	3.0410	3.0708	9.3799	3.9307	.0022	.0.47
F3- Network with community benefits	**2.7959**	**3.1593**	2.2538	2.8373	4.1007	12.3201	.043	.00045
F4- Product knowledge benefits	**3.8029**	**3.9475**	2.5626	3.0209	19.3978	4.3644	1.1e-5	.065

In **bold** is marked the higher weight obtained by each factor per cluster

Table 4. Profile of co-creators (indicators): Motives for participating in co-creation activities in the Netherlands versus Spain.

As shown in Table 4, it is pertinent to note that in the Netherlands, both clusters have the same size (50%). In contrast, in Spain, the first cluster (highly motivated co-creators) is higher than the second cluster (less motivated co-creators), whose sizes are 65.5% and 34.5%. Thus, the number of Spanish co-creators is higher than the number of Dutch co-creators.

In both samples, all factors load into one cluster, which indicates highly motivated co-creators, as the mean values are higher for all factors (i.e., general benefits, enjoyment of financial benefits, network with community benefits, and product knowledge benefits). All values are higher than 2.5 (remember that the values range from 1, strongly disagree, to 5, strongly agree). Thus, all highly motivated co-creators consider participation in online co-creation activities in social media contexts important or very important. In fact, in Spain, the responses are more favorable towards online co-creation activities in social media environments; i.e., all factor values are higher than 3 points.

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 5 shows the group composition based on a number of descriptive criteria included in the analysis. Independence tests associated with the Wald statistic conclude that significant differences exist between the segments (≥90% confidence level) regarding gender, age, and the use of different social media tools.

Covariates	CATEGORIES	HIGH MOTIVATED		LOW MOTIVATED		Wald		p-value	
		NL	SP	NL	SP	NL	SP	NL	SP
Gender	Female	48%	48%	**80%**	**57%**	6.9890	5.0895	.043	.015
	Male	**52%**	**52%**	20%	42%				
Age	Less than 20 years old	4%	7%	4%	**17%**	9.0490	5.6497	.094	.017
	Between 20 and 25 years old	64%	20%	**76%**	17%				
	More than 25 years old	**32%**	**73%**	20%	67%				
LinkedIn	Have an account and use it regularly	**32%**	**7%**	16%	2%	7.4112	6.9590	.062	.040
	Have an account and use it seldom	24%	13%	24%	14%				
	Don't have an account but know it	28%	**40%**	**44%**	37%				
	Don't have an account and don't know it	16%	40%	16%	**47%**				
Wordpress/Blogger	Have an account and use it regularly	**5%**	**3%**	4%	2%	8.5174	8.3024	.082	.073
	Have an account and use it seldom	**31%**	**15%**	8%	12%				
	Don't have an account but know it	**40%**	**50%**	32%	40%				
	Don't have an account and don't know it	24%	32%	**56%**	**46%**				
YouTube / Vimeo	Have an account and use it regularly	40%	7%	**56%**	**30%**	9.3331	7.1310	.095	.068
	Have an account and use it seldom	**36%**	**34%**	28%	21%				
	Don't have an account but know it	**24%**	**52%**	16%	42%				
	Don't have an account and don't know it	0%	7%	0%	7%				
Social Bookmarking Sites	Have an account and use it regularly	**8%**	2%	0%	2%	7.0865	6.3607	.038	.034
	Have an account and use it seldom	**48%**	6%	24%	7%				
	Don't have an account but know it	0%	**17%**	0%	14%				
	Don't have an account and don't know it	44%	75%	**76%**	77%				
Facebook	Have an account and use it regularly	92%	**65%**	**96%**	45%	8.7223	5.9017	.089	.023
	Have an account and use it seldom	**4%**	25%	0%	23%				
	Don't have an account but know it	4%	10%	4%	**32%**				
	Don't have an account and don't know it	0%	0%	0%	0%				
Twitter	Have an account and use it regularly	**36%**	**49%**	20%	28%	6.8632	7.6830	.041	.053
	Have an account and use it seldom	**40%**	**27%**	16%	7%				
	Don't have an account but know it	24%	24%	**64%**	**51%**				
	Don't have an account and don't know it	0%	0%	0%	**14%**				
Instagram	Have an account and use it regularly	12%	**21%**	**32%**	11%	7.5610	7.5335	.063	.057
	Have an account and use it seldom	**36%**	**29%**	4%	9%				
	Don't have an account but know it	**48%**	33%	32%	**44%**				
	Don't have an account and don't know it	4%	17%	4%	**36%**				

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

Table 5. Profile of co-creators (covariates): Descriptive criteria in the Netherlands vs Spain.

In sum, based on the data in Tables 4 and 5, we recognize two co-creator profiles, distinguishing between the Dutch and Spanish samples:

The highly motivated Dutch co-creator cluster presents a higher mean in F4-Product knowledge benefits (3.8020) and F2-Enjoyment benefits (3.6382). Moreover, this cluster shows a significant mean in F3-Network with community (2.7959) and F1-General benefits (2.6676). Compared with less motivated co-creators, this segment is mainly composed of males (52%) who are more than 25 years old (32%). With respect to the use of social media tools by this group in relation to the less motivated segment, it is important to note that highly motivated co-creators have an account on LinkedIn and use it regularly (32%); most of the people in this group do not have an account with Wordpress and know it (40%); a large percentage has an account on YouTube or Vimeo, Social Bookmarking Sites, and Facebook, and uses them seldom (36%, 48%, and 4%, respectively); some have an account and use it regularly and seldom (36%, 40%, respectively); and others do not have an account on Instagram and know it (48%).

The Spanish highly motivated co-creator cluster presents a higher mean in F4-Product knowledge benefits (3.9475) and F1-General benefits (3.8208). Moreover, this cluster shows a significant mean in F2-Financial benefits (3.1993) and F3-Network with community benefits (3.1593). Compared with less motivated co-creators, this segment is mainly composed of males (52%) who are more than 25 years old (73%). With respect to the use of social media tools by this group compared to the less motivated segment, it is important to note that few of these highly motivated co-creators have an account on LinkedIn and use it regularly (7%), and the majority do not have an account but know of this application (40%); most people in this group do not have an account on Wordpress but know it (50%); a high percentage has an account with YouTube or Vimeo and use it seldom (34%) or do not have an account but know it (52%); they do have an account on Social Bookmarking sites and know this (17%); most people have an account on Facebook and Twitter and use it regularly (65% and 49%, respectively); or they have an account on Instagram and seldom use it (29%).

The less motivated Dutch and Spanish co-creators present a number of differences in their responses: The less motivated Dutch co-creator cluster presents a higher mean in F2-Enjoyment benefits (3.0410) and a low mean in F4-Product knowledge benefits (2.5626), F1-General benefits (2.4884), and F3-Network with community benefits (2.2538). Compared with highly motivated

co-creators, the primary motivation of this segment is hedonic (remember that F2 in the case of the Dutch sample is only composed of enjoyment items) as opposed to product learning. This segment is composed mainly of females (80%) between the ages of 20 and 25 years old (76%). Of this group, 44% do not have an account on LinkedIn but know it. They do not have an account on Wordpress and do not know it (56%), but they have an account on YouTube/Vimeo and use it regularly (56%). A large percentage of this group does not have an account on Social Bookmarking sites and does not know it (76%). With respect to the other groups (i.e., highly motivated co-creators), this cluster has a higher percentage of people with an account on Facebook who use it regularly (96% versus 92%). More than half of this group do not have an account on Twitter but know it (64%). This segment has an account on Instagram and uses it regularly (32% versus 12%).

The Spanish less motivated co-creator cluster presents a higher mean in F1-General benefits (3.4243), F2-Financial benefits (3.0708), and F4-Product knowledge benefits (3.0209) and a low mean in F3-Network with community benefits (2.8373). Unlike highly motivated co-creators, satisfaction and hedonic aspects are the main motivation for co-creating (i.e., general benefits) as opposed to product learning. This segment is composed mainly of females (57%) less than 20 years old (17%). Of this group, 47% do not have an account on LinkedIn and do not know it. Moreover, they do not have an account on Wordpress (56%) or Blogger / Wordpress (46%), and they do not know it; however, they have an account on YouTube / Vimeo and use it regularly (30%). A large percentage of this group does not have an account on Social Bookmarking sites and does not know it (77%). With respect to the other group (i.e., highly motivated co-creators), this cluster has a larger percentage of people without an account on Facebook, Twitter or Instagram but are aware of this (32%, 51%, 44% versus 10%, 24%, 33%). Of this group, 64% do not have an account on Twitter and know it. Compared with the previous group, an important percentage of this segment does not have an account on Twitter (14% versus 0%) or Instagram (36% versus 17%) and is not aware of it.

As a consequence, five research questions (i.e., RQ1, RQ2, RQ3, RQ4, and RQ5) have been addressed in the previous paragraphs. In sum, four U&G constructs are adequately significant to define the profile of users based on their motivation for online co-creation (RQ1-RQ4). Moreover, the analysis offers a segmentation of online co-creators based on U&G theory and their personal and technology characteristics, distinguishing some convergences and differences between both countries (RQ5).

5. Conclusions

Co-creation in innovation / new product development leads to a better fit between customer needs and products and to improved relationships between buyers and suppliers; online co-creation has an additional advantage in that producers are able to recruit co-creating customers on a global scale and improve their innovation processes and output. Cooperation between users and producers on innovation projects results in competitive advantages because suppliers are better able to comply with customer demands for value; producers gain insight into the demands, ideas and buying process of customers. Successfully recruiting the most promising customers as online co-creators depends on the ability to understand customer motives in addition to the right communication approaches. In globalized settings, such efforts are challenging because cultural differences have an impact on motivation.

The analysis identifies two segments of co-creators, each with different profiles and motivations for online collaboration in new product development: Highly Motivated and Less Motivated co-creators.

Highly Motivated Co-creators: The empirical results indicate that the main motive of the highly motivated segment in both countries is to improve their product knowledge (i.e., F4-product knowledge benefits), followed by hedonic motives in both populations. A comparison of the relative size of the Highly Motivated segments in the two countries indicates that the Spanish participants show a higher level of motivation than their Dutch counterparts. This might be attributed to the fact that while the adoption of Internet technologies among the Spanish is lower than it is among the Dutch, the adoption rate of social media tools in general, and Social Networking Sites in particular, is higher in Spain. Spanish people also spend more time on Social Networking Sites (ComScore Data Mine, 2012, 2013), which might be because the Spanish are generally more extroverted (Hofstede, 2016). The high level of individualism in the Netherlands as opposed to Spain (Hofstede, 2016) indicates that this society has more individual and individualist attitudes and fewer ties with other people.

While the two most important motives among both populations are similar, there is a difference in the third and fourth motives for online co-creation. For the Spanish, the third most important motive for online co-creation is to obtain enrichment; the Dutch, however, are attracted

by the networking possibilities associated with online co-creation. Cultural characteristics could play a role in these differences, but age is also an issue: The Dutch sample is younger than the Spanish sample. The age difference as well as social media preferences can explain this difference: Social media applications like LinkedIn, YouTube, and Facebook are used by highly motivated Dutch co-creators more than they are by Spanish co-creators. In contrast, highly motivated Spanish co-creators use Twitter and Instagram more than Dutch co-creators do; the Dutch are more self-sufficient (individualists) and therefore use social networking sites such as LinkedIn rather than hedonic and communicative sites such as Instagram and Twitter, which are preferred by Spaniards.

Less Motivated Co-creators: The less motivated co-creators segment in both countries co-innovate for the same reason: hedonism. A secondary motive for the Spanish segment is enrichment, whereas the Dutch are motivated by product knowledge. As in the highly motivated segment, the Spanish participants in the less motivated segment also show a higher level of motivation for online co-creation activities than the same segment of Dutch participants. The percentage of less motivated female co-creators is higher in the Netherlands possibly because of the higher level of masculinity in Spain. Spanish people have a tendency to be more competitive and strive for success. The second and third motives in both groups in this segment are satisfaction and enrichment. The practical value of distinguishing between two types of motivated co-creators is that the approach used by marketers to attract co-creators can be modified according to the needs of the project. Marketers can target the appropriate co-creators using the right communication format: If less motivated consumers are targeted, hedonic elements must underpin the recruitment campaign; highly motivated customers are attracted by rationales that appeal to their need for knowledge or self-actualization. These strategies might be used by marketers to arrange competitions through service (Lusch et al., 2007) within this new open collaboration context.

The average age of both samples is also different in the less motivated segment. The Dutch sample is younger than the Spanish sample. With respect to the use of social media tools, an interesting difference is the regular use of LinkedIn, YouTube, Facebook and Instagram by less motivated Dutch co-creators as opposed to the use of Twitter by less motivated Spanish co-creators. Our findings are consistent with Nambisan & Baron (2009) and Füller et al. (2010), who study the triggers for participation in virtual innovation environments. The findings of Nambisan & Baron (2009) support the thesis that the four types of benefits derived from the U&G framework have a significant influence on customer participation in product support in virtual customer

environments. Füller et al. (2010) also conclude that a product-related motive (knowledge) is an important motivator for co-creating customers, while financial motives are not important.

The positive impact of social and hedonic benefits on the likelihood of customers participating in co-creation activities also supports the findings of Wang & Fesenmaier (2004), who study customer activities in interactive online travelling communities.

Furthermore, Jeppesen & Frederiksen (2006) indicate that recognition from the network community motivates individuals to contribute to co-creation processes, which can be counted among the social integrative benefits.

References

Bartlett, M. S. (1954) A note on the multiplying factors for various approximations. *Journal of the Royal Statistical Society. Series B,* **16**, 296-298.

Blasco, L., Jimenez, J., and Hernández, B. (2014) Los procesos de co-creación y el engagement del cliente: un análisis empírico en medios interactivos [The co-creation processes and the engagement of customer: an empirical analysis in interactive media] Doctoral thesis. Zaragoza, Spain: University of Zaragoza.

Bowden, A., Fox-Rushby, J. A., Nyandieka, L., and 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**, 322-330.

Chang, R. Y., Peng, S. L., Lee, G. L., and Chang, C. J. (2015) Comparing group characteristics to explain community structures in social media networks. *Journal of Internet Technology*, **16**, 957-962.

Chesbrough, H. (2003a) The era of open innovation. *MIT Sloan Management Review,* **44**, 35-41.

Chesbrough, H. W. (2003b) *Open Innovation: The New Imperative for Creating and Profiting from Technology.*). Boston, MA: Harvard Business School Press.

Constantinides, E., Lorenzo-Romero, C., and Gómez, M. A. (2010) Effects of web experience on consumer choice: a multicultural approach. *Internet Research*, **20**, 188-209.

Constantinides, E., Romero, C. L., and Boria, M. A. G. (2008) Social media: a new frontier for retailers? In: B. Swoboda, D. Morschett, T. Rudolph, P. Schnedlitz & H. Schramm-Klein (Eds.), *European Retail Research*. Wiesbaden: Gabler Verlag. pp. 1-28.

Cronbach, L. J. (1951) Coefficient alpha and the internal structure of tests. *Psychometrika*, **16**, 297-334.

ComScore Data Mine (2012) Average hours spent on social networking sites per visitor across Europe. Available at http://www.comscoredatamine.com/2011/01/average-hours-spent-on-social-networking-per-visitor-across-europe/.

ComScore Data Mine (2013) People spent 6.7 billion hours on social networks in october. Available at http://www.comscoredatamine.com/2012/01/people-spent-6-7-billion-hours-on-social-networks-in-october/.

Diaz de Rada, V. (1998) Diseño de tipologías de consumidores mediante la utilización conjunta del análisis cluster y otras técnicas multivariantes [Design of consumers' typologies

through the join use of cluster analysis and other multivariate techniques]. *Economía Agraria*, **182**, 75-104.

Dillon, W. R. and 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*. Cambridge, MA: Blackwell Publishing House Business.

Eighmey, J. and McCord, L. (1995) Adding value in the information age: uses and gratifications of the world-wide web. Paper presented at Conference on Telecommunications and Information, Markets. Newport, RI.

Eurostat. (2013) Three quarters of Europeans used the internet in 2013. Available at http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Internet_use_59statistics_-_individuals.

Fielding, R. T. (1999) Shared leadership in the Apache project. *Communications of the ACM*, **42**, 42-43.

Fitzsimmons, J. A. (1985) Consumer participation and productivity in service operations. *Interfaces*, **15**, 60-67.

Franke, N. and Shah, S. (2003) How communities support innovative activities: an exploration of assistance and sharing among end-users. *Research Policy*, **32**, 157-178.

Frías-Navarro, D. and Soler, M. P. (2012) Prácticas del análisis factorial exploratorio (AFE) en la investigación sobre conducta del consumidor en marketing [Exploratory factorial analysis practices in the research on consumer behaviour in marketing]. *Suma Psicológica*, **19**, 47-58.

Füller, J., Faullant, R., and 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**, 1376-1383.

Füller J., (2010), Refining Virtual Co-Creation from a Consumer Perspective, *California Management Review,* Vol 52, Issue 2, pp. 98 - 122

Grande, I. (2004) *Marketing Crosscultural*. Madrid, Spain: Esic Editorial.

Guttman, L. (1954) *Mathematical Thinking in the Social Sciences*. New York, NY: Free Press.

Hair, J., Anderson, R., Tatham, R., and Black, W. (1998) *Multivariate Data Analysis*. London, UK: Prentice-Hall.

Hair, J., Anderson, R. E., Tatham, R. L., and Black, W. C. (1995) *Multivariate Data Analysis with Readings.* 4th ed. Englewood Cliffs, NJ: Prentice-Hall.

Halloran, T. J. and Scherlis, W. L. (2002) High quality and open source software practices. Paper presented at Meeting Challenges and Surviving Success: 2nd Workshop on Open Source Software Engineering. Orlando, FL: ACM. pp. 669-670.

Hertel, G., Niedner, S., and Herrmann, S. (2003) Motivation of software developers in Open source projects: an internet-based survey of contributors to the Linux kernel. *Research Policy*, **32**, 1159-1177.

Hofstede, G. (1980) *Culture's Consequences: International Differences in Work-Related Values*. Beverly Hills, CA: SAGE Publications.

Hofstede, G. (2001) *Culture's Consequences: Comparing Values, Behaviors, Institutions and Organizations Across Nations*. Thousand Oaks, CA: SAGE Publications.

Hofstede, G. (2016) The hofstede centre. Available at http://geert-hofstede.com/countries.html.

Hoyer, W. D., Chandy, R., Dorotic, M., Krafft, M., and Singh, S. S. (2010) Consumer cocreation in new product development. *Journal of Service Research*, **13**, 283-296.

Humphreys, A. and Grayson, K. (2008) The intersecting roles of consumer and producer: a critical perspective on co-production, co-creation and prosumption. *Sociology Compass,* **2**, 963-980.

Jeppesen, L. B. and Frederiksen, L. (2006) Why do users contribute to firm-hosted user communities? The case of computer-controlled music instruments. *Organization Science,* **17**, 45-63.

Kaiser, H. F. (1970) A second generation little jiffy. *Psychometrika,* **35**, 401-415.

Kambil, A., Friesen, G. B., and Sundaram, A. (1999) Co-creation: a new source of value. *Outlook Magazine,* **3**, 23-29.

Katz, E., Blumler, J. G., and Gurevitch, M. (1974) Utilization of mass communication by the individual. In: J. G. Blumler and E. Katz (Eds.), *The Uses of Mass Communications: Current Perspectives on Gratifications Research*. Beverly Hills, CA: Sage Publications.

Kleemann, F., Voß, G. G., and Rieder, K. (2008) Crowdsourcing und der arbeitende konsument. *Arbeits- und Industriesoziologische Studien,* **1**, 29-44.

Kollock, P. (1999) The economies of on-line cooperation: gifts, and public goods in cyberspace. In: M. A. Smith and P. Kollock (Eds.), *Communities in Cyberspace*. London, UK: Routledge. pp. 220-239.

Kristensson, P., Matthing, J., and Johansson, N. (2008) Key strategies for the successful involvement of customers in the co-creation of new technology-based services. *International Journal of Service Industry Management,* **19**, 474-491.

Leung, L. and Wei, R. (2000) More than just talk on the move: uses and gratifications of the cellular phone. *Journalism & Mass Communication Quarterly,* **77**, 308-320.

Luo, X. (2002) Uses and gratifications theory and e-consumer behaviors. *Journal of Interactive Advertising,* **2**, 34-41.

Lusch, R. F., Vargo, S. L., and O'Brien, M. (2007) Competing through service: insights from service-dominant logic. *Journal of Retailing,* **83**, 5-18.

Malone, T. W., Laubacher, R., and Dellarocas, C. (2010) The collective intelligence genome. *MIT Sloan Management Review,* **51**, 20-32.

McKinsey Global Institute., (2011) The social economy: unlocking value and productivity through social technologies. Available at http://www.mckinsey.com/insights/high_tech_telecoms_internet/the_social_economy.

McLachlan, G. J. and Basford, K. E. (1988) *Mixture Models: Inference and Applications to Clustering*. New York, NY: Marcel Dekker.

McLure Wasko, M. and 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**, 155-173.

Nakakoji, K., Yamamoto, Y., Nishinaka, Y., Kishida, K., and Ye, Y. (2002) Evolution patterns of open-source software systems and communities. Paper presented at the IWPSE 2002: Proceedings of the International Workshop on Principles of Software Evolution, New York, NY.

Nambisan, S. and Baron, R. A. (2007) Interactions in virtual customer environments: implications for product support and customer relationship management. *Journal of Interactive Marketing,* **21**, 42-62.

Nambisan, S., and Baron, R. A. (2009) Virtual customer environments: testing a model of voluntary participation in value co-creation activities. *Journal of Product Innovation Management,* **26**, 388-406.

Newhagen, J. E. and Rafaeli, S. (1996) Why communication researchers should study the internet: a dialogue. *Journal of Communication*, **46**, 4-13.

Palmgreen, P. and Rayburn, J. D. (1985) A comparison of gratification models of media satisfaction. *Communication Monographs*, **52**, 334-346.

Prahalad, C. K. and Ramaswamy, V. (2004) *The Future of Competition: Co-Creating Unique Value with Customers*. Boston, MA: Harvard Business Review Press.

Ramaswamy, V. (2005) Co-creating experiences with customers: new paradigm of value creation. *TATA Journal of Management*, **8**, 6-14.

Rohrbeck, R., Hölzle, K., and Gemünden, H. G. (2009) Opening up for competitive advantage: How Deutsche Telekom creates an open innovation ecosystem. *R&D Management*, **39**, 420-430.

Ruggiero, T. E. (2000) Uses and gratifications theory in the 21st century. *Mass Communication and Society*, **3**, 3-37.

Urista, M. A., Dong, Q., and Day, K. D. (2008) Explaining why young adults use myspace and facebook through uses and gratifications theory. *Human Communication*, **12**, 215-229.

van Blokland, W. B. and Santema, S. C. (2006) *Value Chain Innovation Processes and the Influence of Co-Innovation*. Ljubljana, Slovenia: IMP.

Vargo, S. L., Maglio, P. P., and Akaka, M. A. (2008) On value and value co-creation: a service systems and service logic perspective. *European Management Journal*, **26**, 145-152.

Vermunt, J. K. and Magidson, J. (2002) Latent class cluster analysis. In: J. A. Hagenaars and A. L. McCutcheon (Eds.), *Applied Latent Class Analysis*. Cambridge, UK: Cambridge University Press. pp. 89-106.

Vermunt, J. K. and Magidson, J. (2005) *Latent Gold 4.0 User's Guide*. Belmont, MA: Statistical Innovation, Inc.

von Hippel, E. (2001) PERSPECTIVE: user toolkits for innovation. *Journal of Product Innovation Management*, **18**, 247-257.

von Hippel, E. (2005) Democratizing innovation: the evolving phenomenon of user innovation. *Journal für Betriebswirtschaft*, **55**, 63-78.

Wang, Y., Fesenmaier, D. R. (2004) Towards understanding members' general participation in and active contribution to an online travel community. *Tourism Management*, **25**, 709-722.

Whelan, E., Teigland, R., Donnellan, B. and Willie, G. (2010) How Internet technologies impact information flows in R&D: Reconsidering the technological gatekeeper. *R&D Management*, **40**, 400-413.

Xia, L. and Suri, R. (2014) Trading effort for money: consumers' cocreation motivation and the pricing of service options. *Journal of Service Research*, **17**, 229-242.

Zolkepli, I. A. and Kamarulzaman, Y. (2015) Social media adoption: the role of media needs and innovation characteristics. *Computers in Human Behavior*, **43**, 189-209.

Zwartjes, B. C. (2011) Co-creation from a consumer perspective: consumer motivations to partake in and success factors of a co-creation initiative. Master's thesis. The Netherlands: Wageningen University.