Measuring Value Perception In S-commerces: the development of a scale

Autoria

Helen Tomaz Hexsel - hthexsel@yahoo.com.br
Prog de Pós-Grad em Admin/Área Escola de Gestão e Negócios - PPGAdm/UNISINOS - Universidade do Vale do Rio dos Sinos

Cynthia Mikaela Chemello Faviero Lopes - cynthia.faviero@gmail.com
Prog de Pós-Grad em Admin/Esc de Admin - PPGA/EA/UFRGS - Universidade Federal do Rio Grande do Sul

Resumo

This article aims to develop and validate a scale that measures the perception of value of the actors when their are co-creating in social comerces in the context of sharing economy. Therefore, it was identified in the literature the constructs that could identify the perception of value in the context of this study. After that, validation was performed with area experts, pre-tests and effective tests with more than 500 respondents were done in the exploratory stage. After purification of the proposed scale, a new data was collected with 203 respondents and the confirmatory analysis was performed. The results show that the perception of value comes from the confidence of the platform, the available information, the convenience, the trust in the recommendations/ reviews, the utility value and the hedonic value.

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Abstract

This article aims to develop and validate a scale that measures the perception of value of the actors when their are co-creating in social comerces in the context of sharing economy. Therefore, it was identified in the literature the constructs that could identify the perception of value in the context of this study. After that, validation was performed with area experts, pre-tests and effective tests with more than 500 respondents were done in the exploratory stage. After purification of the proposed scale, a new data was collected with 203 respondents and the confirmatory analysis was performed. The results show that the perception of value comes from the confidence of the platform, the available information, the convenience, the trust in the recommendations/ reviews, the utility value and the hedonic value.

Key-Words: Sharing Economy; Perceptions of Value; Social Commerce; Scale.

1 Introduction

The notion of finite resources has been gaining momentum and mitigation of environmental problems has been seen as a global challenge. In this way, mechanisms that encourage economic development, but also work to reduce environmental problems are being focused. In this context, it arises from the notion of shared economy, which, through interactive digital platforms, works with markets of redistribution, of idle goods transferring them from places where they are no longer useful to others where they have (Bringezu; Botsman & Rogers, 2011; Kathan, Matzler & Veider, 2016).

In the digital environment, social networks allow the existence of co-creation and have been considered as a means of collaborative communication between the actors involved (Hsu, 2015) insofar as it facilitates the relationship between clients and organizations, thus enabling the increase of heterogeneity of knowledge in the community (Laursen and Salter, 2006). In this sense, as a by-product of these forms of interaction, social commerce, social commerce or s-commerce platforms also appear.

Historically, traditional commerce presupposes people interacting in relation to purchases, which is a process of a social nature. Electronic commerce (e-commerce) has a logic that generates a solitary experience, in which people interact only with software (Mardsen, 2010). Chaumond (2010) conceptualizes social commerce as the intersection of social networks with e-commerce, because allied to a pleasant and efficient interface, social commerce provides an increasingly better experience to the user and potential client. Thus, according to Soares, Dolci & Lunardi (2015), social commerce should be seen as an electronic commerce that uses social networks for interactions and contributions among users, in order to facilitate the process of buying products and services online.

It is possible to see, therefore, that social commerces are based on co-creation, that is, on the sharing of opinions (Kim & Park, 2013) and recommendations (De Souza & Schoeffel, 2013) existent in the platforms that, in turn, perceived by the actors when co-creating in such environments. When we talk about value perception, it refers to the consumer's evaluation of what was offered to him and what he actually received when he / she purchased a product / service (Zeithaml, 1988).

When studying the subject in depth, it was noticed that a scale to measure the perception of value of users of social commerces in the context of shared economy had not yet been developed, most probably due to the contemporaneousness of the theme. Thus, the article that gave rise to the database was developed with the purpose of proposing a scale to

measure the perception of value in the environment of social commerces in the context of shared economy.

According to Zihaly (2016), shared economics is a recent phenomenon that has transformed consumer behavior, ultimately challenging traditional models of value creation and capture. Kathan, Matzler & Veider (2016) emphasize that the shared economy is in full growth and shows no signs of saturation. Therefore, the proposition of an instrument can be an advance in the state of the art of the subject under study. Therefore, the accomplishment of this research can propitiate an advance of the knowledge on the subject.

2 Measurement Perception Measurement In Social Commerces

The present study aimed to develop a scale for measuring the perception of value in social commerces in the context of shared economy. The intention to measure the perception of value comes from the significant impact it has on the process of repurchasing a product or service. It is believed, based on the literature review, that the fundamental dimensions of the perception of value in s-commerce are:

a) **Confidence in the Platform:** Social commerce has characteristics that facilitate the formation of trust. The reputation / image that the platform has, that is, how much consumers believe it to be honest and concerned about its customers, is directly related to the increase in user confidence (Hajli, 2015; Kim *et al*., 2013). In addition, the quality of the communication used, the security and privacy of the data influences the perception of trust in the platform (Hsiao et al., 2010; Lin & Lu, 2011).

b) **Convenience**: It comes from the accessibility of the product/service and is considered critical for the adoption and execution of online purchases. Therefore, it is directly related to the acceptance and use of a technology (Devaraj, 2002; To, Liao & Lin, 2007; Gupta & Kim, 2010). Therefore, when considered useful and easy to use, one has the perception of convenience.

c) **Price**: Consumers who buy online are more price sensitive than those who buy in physical stores (Chen, Chen & Song, 2007; To *et al.,* 2007, Kauffman & Lai, 2010; Hsiao *et al*., 2010) . This is attributed to the fact that there are fewer tangible attributes available for evaluating a product / service and the price is easy to analyze (Lee, 2016). Therefore, it is a factor that influences the perception of value.

d) **Confidence in recommendations and reviews**: Information from reviews tends to influence the perception of risk and cost of a product / service (Hajli, 2015; Liang *et al*., 2011). This is because, in online media, the consumer can not experience what they want to acquire. Therefore, they end up relying on the experiences and recommendations of other consumers (Senecal & Nantel, 2004).

e) **Platform quality**: It comes from the perceived value and directly influences the intention of use and reuse (Zeithaml, 1988; Kim, Chan & Gupta, 2007; Gupta & Kim 2010; Chen & Dubinski, 2003) of a s-commerce platform. We subdivide this construct into utility value and hedonic value.

3 Method

In order for the scale of multiple items to be developed, Churchill's (1979) guidelines were followed. Thus, the first step to be carried out consisted of a broad literature review on the constructs studied with the purpose of defining value perception and s-commerce. Afterwards, the generated scale was submitted to the evaluation and validation of specialists in s-commerce.

The third step, after the necessary adjustments were made, was when a scale was

composed of 31 questions, distributed in 5 dimensions: **trust in the platform** (subdivided into security, communication and information and reputation), **convenience, price, trust in the recommendations / reviews, platform quality** (subdivided into utilitarian value, hedonic value). The 5-point Likert scale was used to measure the perception of value in s-commerce, which was submitted to a pre-test stage with 30 people (Hair, 2013).

The fourth stage began with the collection made with the first version of the instrument produced in the previous phase. Taking into account that there is no way to measure the number of people using s-commerces, it was determined that the population of this study is infinite. Hair *et al.* (2003) clarifies that in the case of infinite populations, population size has no impact on the determination of sample size. Therefore, in order for the scale to be validated, it was necessary to collect 500 valid questionnaires, in order to maintain a reliability of 95%. The final application of the questionnaire occurred in the online medium through publications in social networks, distributed from the snowball method. In the end, 513 questionnaires were computed. Following the recommendations of Hair *et al.* (2003), based on the standard deviation presented by the respondents, those who did not present a deviation (respondents who had the same degree of agreement for all questions), were withdrawn from the sample. Therefore, 13 outliers were excluded, and the final sample was reduced to 500 respondents.

After the data collection, the fifth step was started, which consists of the analysis of the measures with the SPSS22.0 Software through the exploratory factorial analysis (EFA), as the objective of identifying the factors measured by the indicators. In addition, the analysis of the internal consistency of each dimension obtained in the factorial analysis was performed, and indicators with low performance, such as those with low loads or cross loads, were expurgated. This purification is important so that the instrument is composed of a smaller number of indicators, but with greater robustness (Hair *et al.*, 2003).

Finally, the sixth stage consisted in re-applying the already refined instrument. In the seventh stage, a confirmatory factorial analysis was carried out to evaluate the fit of the model, as well as the construct validity, thus supporting the proposed scale. For this to be possible, a structural equation modeling was performed with the aid of the software AMOS22.0 evaluating the quality of the fit and validity of the constructs of the scale. 203 respondents were obtained. Following the same pattern of the first data collection, the standard deviation of the respondents was calculated to identify those who maintained the same degree of agreement for all questions and no respondents had to be withdrawn from the sample for that reason. However, analyzing the s-commerces platforms identified by the respondents, it was noticed that 3 of them identified platforms that do not constitute s-commerces, so it is necessary to remove them from the sample. Therefore, the final sample was with 200 respondents.

4 Data Presentation and Analysis

This chapter starts with the results obtained from the first data collection performed with 500 valid respondents. Afterwards, the results of the second collection performed after the purification of the scale will be presented, with 200 questionnaires validly answered.

4.1 First data collection

The sample had the following characteristics: 34% were male and 66% were female; 16.2% are under 25 years of age, 49% are between 25 and 34, 37.2% are between 35 and 44 years of age, and the remaining 13.8% are over 45 years of age. Regarding the social commerce platform chosen for the survey, 75.6% chose Uber, 16% AirBnb and 5.4% Enjoei.

Still, there were responses that were based on experiences with s-commerces such as Mercado Livre (2.4%) and Cabify (0.6%).

The procedures used to test and purify the scale were based on the propositions of DeVellis (1991), in which the exploratory factorial analysis, the commonalities of the items, the measure of reliability through Cronbach's Alpha, and the consequent item- item and total item were used, in addition to basic descriptive measures.

The KMO measure initially found was 0.855, and the Barlett sphericity test <0.001. According to Hair *et al.* (2003), measures above 0.80 are good for the KMO. The Barlett sphericity test evaluates whether there is an internal correlation between the variables. The two tests analyze whether there is an adequate factorial analysis.

Regarding the commonalities of the issues, according to Hair et al. (2003), should present values greater than 0.50. In the evaluation performed, all items had scores higher than this value, and, therefore, were maintained and considered satisfactory. The total variance explained by the model was 68.78%. However, when analyzing the rotating component matrix, it was noticed that several questions were grouped outside their dimensions. In this way, in the attempt to obtain a more robust scale, the purification of this one began by extracting the items that were displaced from the original dimensions. The dimensions taken out were: platform reputation and price.

After the exclusion of these dimensions, a new factor analysis was performed. The KMO measurement obtained the value of 0.823, and the Barlett sphericity test <0.001. Analyzing the commonalities, it was observed that all values found remained above 0.50, and the total variance explained by the adjusted model increased to 70.849%. Table 1 presents the results obtained after the factorial analysis and Cronbach's Alpha that analyzes the interrelation between the items of a scale in order to verify if they are measuring the same construct (Hair *et al.*, 2003).

It can be seen that the last dimension: platform safety obtained a Cronbach Alpha of 0.618. According to Hair et al. (2003), although it is considered acceptable indexes above 0.70, when performing exploratory studies it is possible to accept an index above 0.60. Given this, it was decided to keep this dimension on the scale. Due to the statistical tests carried out, some dimensions and some variables were deleted. The validated questionnaire included 22 questions divided into four final dimensions: **platform confidence** (subdivided into security, communication and information), **convenience, confidence in recommendations / reviews and platform quality** (subdivided into utility value and hedonic value).

Table 1
Cronbach's Factorial and Alpha of the First Collection

	Confidence in reccommendations	Utility value	Information	Hedonic Value	Convenience	Security
conf13: Reviews / reviews are important to select the product / service	0,889					
conf14: Reviews / reviews help to select the product / service	0,858					
conf15: Reviews / reviews complement the information provided by the platform	0,848					
conf12: It is worth to use comments / reviews as a reference	0,823					
conf16: I trust the recommendations made on this platform	0,703					
uti19: This platform is functional		0,820				
uti18: This platform is useful		0,781				
uti17: This platform is efficient		0,736				
uti20: This platform is practical		0,654				
info7: This platform provides support if there is a problem			0,870			
info6: This platform answers questions and solves problems promptly			0,841			
info5: This platform provides enough information on how to use it			0,714			
hed: 23: This platform is pleasurable				0,864		
hed21: This platform is fun				0,849		
hed22: This platform is nice				0,760		
conv9: I can use this platform from anywhere					0,771	
conv8: I can use this platform any time I want					0,761	
conv10: I can use this platform according to my own schedule					0,707	
conv11: I use this platform because it seems convenient					0,540	
sec2: This platform guarantees the privacy of my data						0,799
sec4: This platform authenticates my data						0,717
sec3: This platform offers guarantees regarding what I buy / services that I contracted						0,570
Crombach's Alpha	0,90	0,83	0,83	0,86	0,72	0,62
Crombach's Alpha Total	0,88					

4.2 Second data collection

In the second round, the adjusted questionnaire was applied, coming from the statistical analyzes performed with the data from the first collection. Regarding the characteristics of this sample, most respondents chose the Uber platform (73%) or AirBnb (21%) to base their answers on the questionnaire. In the sample, 62% were female and 38% male, with 53% of respondents between 25 and 34 years old, 24% between 36 and 24 years old, 16% between 19 and 23 years old, and 7% 45 years or more.

In the research, the theoretical model of the CFA comes from the four dimensions found in the EFA, which, in turn, were subdivided into 6 factors: platform confidence (SEG), information available (INFO), convenience (CONV), confidence in recommendations / reviews (SET), utility value (UTI) and hedonic value (HED) and their association to the corresponding items as seen in table 1.

In order to evaluate the quality of the data collection instrument and to perform the validation of the constructs, a reliability analysis was performed, based on the Cronbach's Alpha, composite reliability (CR) and the extracted variance (EV). According to Hair et al. (2003), satisfactory Cronbach's alpha indexes and composite reliability are above 0.70 and for variance extracted above 0.5. However, the author points out that for new scales, the minimum value of 0.60 for Cronbach's Alpha and Netemeyer, Bearden and Sharma (2003) is accepted, complementing that for new scales one accepts a minimum of 0.45 of EV and 0,60 dc. The results extracted from the analyzed model are presented in Table 2.

Table 2
Model Reliability Analysis

CONSTRUCT	After Purification				Before Purification			
	VARIABLES	ALPHA	CR	EV	VARIABLES	ALPHA	CR	EV
Security on Platform	3	0,635	0,63	0,37	***	***	***	***
Informations Available	3	0,816	0,83	0,63	***	***	***	***
Conveniency	4	0,669	0,71	0,38	3	0,653	0,67	0,41
Trust in the Reviews	5	0,883	0,9	0,66	***	***	***	***
Utility Value	4	0,857	0,87	0,62	***	***	***	***
Hedonic Value	3	0,868	0,89	0,69	***	***	***	***

As can be seen in table 2, the platform security construct has a EV value below the desired standard. However, since the construct has only 3 variables, exclusions are not advised. In this way, it was chosen to maintain the construct even if its indicators were below the desirable one, since it was believed that the exclusion of the same one would cause a loss of content (Hair *et al.*, 2003).

When analyzing the convenience construct, it is noticed that its CR is adequate, yet its EV is below the desired standard. Because the construct has 4 variables, a purification was performed. Thus, we chose to remove question conv9 "I can use this platform from anywhere" in order to improve the reliability indices of the construct. In this way, it can be seen that the value of the EV improves, however, not enough to reach the desired minimum standard. Thus, there is a worsening of the Cronbach Alpha value and the value of the CR of the construct, but these remain within the acceptable standard. Thus, although the construct has a value LV below the desired one, as in the previous construct analyzed, it was decided to keep it purified within the range, in order not to cause a loss of content.

In addition, Hair *et al.* (2003) points out that the indicators should be analyzed together before any changes are made to the model studied. Therefore, taking into account that the other constructs had adequate values in the reliability question and the other indexes analyzed, which will be demonstrated below, were within the acceptable standards, it was decided to maintain the scale with 21 questions, 1 less which had been proposed in the CFA, thus maintaining the 4 dimensions, subdivided into 6 factors, as had been originally proposed.

The analysis of the information was carried out taking into account the guidelines of Vieira & Ribas (2011): a) evaluation of the signal and magnitude of the parameter estimates in light of the theory underlying the construction of the model, b) verification of the existence of standard errors inadmissible and c) critical reason (CR) evaluation, which is calculated by promoting the division of the parameter estimate by the standard error.

The parameters of the model, demonstrate that the sample had 200 observations. The estimation process generated an admissible solution, whose overall picture is estimated with the value X^2 (359,536), together with the degrees of freedom (174) and the probability level (0.000). The estimates of the model parameters by presenting the regression weights estimates, the standard errors (S.E.) and the respective critical ratios (C.R.), thus showing the information on the adjustment of the individual parameters. In turn, the estimates of the model parameter should occur by the theoretical means, and the signs and magnitudes of the coefficients should be in accordance with the theoretical and statistical requirements, and the parameter estimates should not be associated with improper variances (Vieira & Ribas, 2011).

The critical reason (C.R.) allows us to test whether the estimate is statistically different from zero, which should be greater than ± 1.96 so that the null hypothesis is rejected if we consider a significance level of 5%. Analyzing the hypothetical model, in tests, it is noticed that all the individual estimates are statistically consistent, as well as theoretical robustness (Vieira & Ribas, 2011). According to Table 2, all variables observed in the constructs of the model have R.C> 1.96, all of which are significant (Sig <0.001).

Table 2
Model Parameter Estimates

Pesos de Regressão	Estimativa	Standard Errors	C.R.
seg2 ← SEG	1,000		
seg3 ← SEG	1,143	0,189	6,035
seg4 ← SEG	0,760	0,148	5,145
info5 ← INFO	1,000		
info6 ← INFO	1,712	0,204	8,376
info7 ← INFO	1,743	0,208	8,374

conv8 ← CONV	1,000		
conv10 ← CONV	1,180	0,215	5,484
conv11 ← CONV	1,128	0,179	6,303
conf12 ← CONF	1,000		
conf13 ← CONF	1,113	0,078	14,304
conf14 ← CONF	1,139	0,080	14,312
conf15 ← CONF	1,050	0,082	12,777
conf16 ← CONF	0,684	0,080	8,527
uti117 ← UTI	1,000		
uti118 ← UTI	0,906	0,094	9,643
uti119 ← UTI	1,255	0,116	10,860
uti120 ← UTI	1,272	0,125	10,162
hed21 ← HED	1,000		
hed22 ← HED	0,896	0,72	12,324
hed23 ← HED	1,039	0,82	12,636

Table 3 presents information about the structural model which, in turn, admits the existence of covariance between the constructs. The model presents statistical significance (R.C.> 1.96 and Sig <0.03), for all covariates.

Table 3
Informations about the Structural Model

Covariância	Estimativa	E.P	R.C
SEG ←→ INFO	0,150	0,037	4,061
SEG ←→ CONV	0,099	0,028	3,580
SEG ←→ CONF	0,129	0,039	3,329
SEG ←→ UTI	0,144	0,031	4,589
SEG ←→ HED	0,152	0,046	3,292
INFO ←→ CONV	0,081	0,023	3,529
INFO ←→ CONF	0,063	0,030	2,073
INFO ←→ UTI	0,105	0,024	4,322
INFO ←→ HED	0,129	0,039	3,303
CONV ←→ CONF	0,077	0,026	3,006
CONV ←→ UTI	0,115	0,024	4,828
CONV ←→ HED	0,100	0,031	3,178
CONF ←→ UTI	0,101	0,027	3,784
CONF ←→ HED	0,165	0,048	3,460
UTI ←→ HED	0,179	0,035	5,049

Table 4 shows the quality indices of the adjustment of the model, from the information on the number of parameters (NPAR), the minimum discrepancy (CMIN), degrees of freedom (DF), probability (p), and ratio CMIN / DF). It is observed that the CMIN value of 359,536 represents the discrepancy between the covariance matrices S and Σ, constituting, essentially, the likelihood ratio test, which is usually expressed as the X^2 statistic (Vieira & Ribas, 2011). To the extent that X^2 is extremely sensitive to sample size, the ratio X^2 / degrees of freedom is used instead of X^2. Therefore, the CMIN / DF (minimum discrepancy / degrees of freedom) represents the difference between the observed and estimated covariance matrices, which should be less than three (Hair et al., 2003). The CMIN / degrees of freedom adjustment statistics of the model is 2.066 and this value is within the acceptable parameter.

Table 4
Adjustment Quality Indices for the Model

Model	NPAR	CMIM	DF	P	CMIN/DF
Default Model	57	359,536	174	0,000	2,066

The absolute quality indexes for adjustment of the model are presented in table 6. The NFI has a value of 0.848, the IFI a value of 0.915, the TLI a value of 0.896 and the CFI a

value of 0.914. According to Hair et al. (2003), the main function of these indices is to assist in the discrimination of acceptable and non-acceptable models. According to him, it is recommended that the value of the indexes be equal to or greater than 0.90. However, the author points out that there are researches that dispute the use of a single value for cutting, since no single value differentiates good or bad models. Thus, because the NFI and TLI indices are very close to the desired standard and taking into account the other indices analyzed in the model, these values are considered acceptable.

Table 5
Absolute Quality Asset Indexes for the Model

Model	NFI	IFI	TLI	CFI
Default Model	0,85	0,91	0,90	0,91

The PRATIO adjustment parsimony indexes in the value of 0.829, PNFI in the value of 0.703 and PCFI in the value of 0.757 are satisfactory, since all values are above 0.60 and are detailed in table 7. The parsimony ratio (PRATIO) is not a test of excellence in itself, but rather used as a measure of quality of the adjustment and consists of the ratio of the degrees of freedom of the model surveyed in relation to the degrees of freedom of the null model. The normalized parsimony index (PNFI) and the comparative parsimony index (PCFI) reward parsimonious models and are the result of the multiplication of PRATIO over NFI and IFC, respectively.

Table 6
Thrift and Adjustment Indices

Model	PRATIO	PNFI	PCFI
Default Model	0,83	0,70	0,766

Finally, Table 7 shows the root mean square error of approximation (RMSEA), which is considered to be the most informative criterion of covariance structure modeling (BYRNE, 2001). This measure represents the discrepancy by degree of freedom of the square root of the mean of the residuals of the observed and squared models. The value of RMSEA generated by the research model (0.073) is indicative of a good adjustment, considering that it is considered acceptable for the value to be between 0.05 and 0.08 (Hair *et al.*, 2003).

Table 7
Diverse Quality Index of Adjustment for the Hypothetical Model

Model	RMSEA	LO90	HI90	PCLOSE
Default Model	0,073	0,062	0,084	0,000
Independence Model	0,227	0,219	0,235	0,000

5 Final Considerations

The objective of this research was to propose a scale to measure the perception of value in s-commerce in the context of shared economy. Initially, the proposed scale contained 5 dimensions, sub-divided into 8 factors and counted with 34 questions. However, after the data collection and analysis, the proposed scale was refined, containing, in its final version, 4 dimensions, subdivided into 6 factors and 21 questions. Thus, it is concluded that the value perception of the use of s-commerce can be understood from the dimensions: trust in the platform (subdivided into: platform security and communication / information provided by the platform), convenience found in its use, trust in recommendations / reviews, and platform quality (subdivided into utility value and hedonic value).

This research can be considered an initial effort to measure the perception of value in s-commerce, since research on this topic was not done previously. However, new studies must be done to improve the scale and contribute to theoretical-empirical knowledge on the subject. Thus, it ends up making a theoretical contribution insofar as it offers a breakthrough for studies in both s-commerces and shared economics, since it offers an instrument suitable for the development of other researches. Also, at the marketing level, the possibility of analyzing and understanding the perception of value that users see when using a certain platform, assists managers, developers, and various professionals in decision-making processes.

It is recommended, for future studies, that the scale proposed here be applied in other realities, in other countries, in other cultures, in order to have its validity tested in other contexts, and may even be used as a basis for the construction of new instruments. Due to the rapidity that accompanies and characterizes the digital environment, one can think that very soon there will be new scenarios needing more understanding, and therefore, the use of existing studies is very important to help in the unfolding of new phenomena.

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