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## Could consumer resources be even more important than firm resources to explain perceived value in e-commerce contexts?

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### Abstract

*Based on Service-Dominant (S-D) Logic and related perspectives, which suggest that value is co-created through the integration of resources, this study proposes a model which considers two value co-creation sources: (1) firm resources, in the form of process Electronic-Service Quality (ESQ) and outcome ESQ, and (2) consumer resources, as represented by consumer expertise and its antecedents (i.e., social expertise and Internet skills). This research analyzes the effect of product type on the relationship between both co-creation sources and value, by collecting survey data from 1,187 e-buyers. For low-outlay/high frequency (LO/HF) products, consumers rely more on their own resources, and expertise is more important than process and outcome quality. For high-outlay/low frequency (HO/LF) products, however, firm resources have a stronger impact. The research findings may be useful to design e-commerce strategies combining specific ESQ and expertise-related policies according to the type of product offered by the e-service provider.*

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### 1. Introduction

This study is grounded in Service Dominant Logic (SDL), Service Science and Service Logic (in advance, service perspectives), which give the consumer a prominent role in the creation of value, by suggesting that firms and customers co-create value through the integration of resources (Vargo and Lusch, 2004, 2008, 2011; Lush et al., 2008; Grönroos and Gummerus, 2014).

We consider Electronic Service Quality (ESQ) dimensions as representative of firm resources in e-commerce settings. Prior ESQ research has focused on the development of measurement scales to assess the quality of the service provided by e-commerce providers. Some efforts have also been addressed to explain the nomological validity of the scales by studying the effect of ESQ on value (Parasuraman et al., 2005; Gummerus, 2010) and/or loyalty (Parasuraman et al., 2005; Collier and Bienstock, 2006).

Nevertheless, important value drivers have been neglected, which could lead to misrepresentation of the effect of ESQ dimensions on value, and misleading conclusions. Firstly, as mentioned above, service perspectives suggest that consumer resources should be considered to properly explain perceived value. Secondly, as the products bought over the Internet have very different characteristics (e.g., online banking investments vs. books), product type could affect consumer behavior during the e-buying process and the value perceived (Peterson et al., 1997).

We take a step toward filling these research gaps by combining three facets that have not previously been brought together by cross-sectional empirical e-commerce research: firm resources, in the form of ESQ dimensions, consumer resources as represented by consumer expertise and its antecedents, and type of product. Our research is intended to answer the following questions: (1) Do both firm resources and consumer resources actually affect perceived value when jointly considered, as service perspectives suggest? (2) Is the size of the effect of firm and consumer resources on value dependent on product type? By adopting this approach we provide a more complete picture of value cocreation drivers in e-commerce settings.

The remainder of this article consists of eight sections. The next section depicts the proposed model and discusses its grounding. The third section deals with the hypothesis development. The fourth section explains the data collection approach and the metrics employed. The fifth section presents the results achieved. Finally, a discussion is offered.

## **2. Theoretical Background**

We build a model in which the value perceived by consumers in e-commerce contexts has two major drivers: consumer resources and firm resources (see figure 1).

### **2.1. Consumer knowledge-related resources**

Building on Arnould et al. (2006) we propose that major consumer resources are consumer expertise and its antecedents: social expertise and navigation skills.

Our conceptualization of consumer expertise stems from Alba and Hutchinson (1987). They defined expertise as the ability to perform product-related tasks successfully. Expertise relies on both the cognitive structures (e.g., beliefs about product attributes) and cognitive processes (e.g., decision rules for acting on those beliefs) which are appropriate to fulfill these tasks successfully (p.411). Five dimensions of consumer expertise are identified by Alba and Hutchinson (1987): (1) cognitive effort; (2) cognitive structure; (3) analysis; (4) elaboration; and (5) memory (see definitions in table 2). They propose that experts have advantages over novices in each dimension, thereby being able to perform product-related tasks more efficiently.

Social expertise refers to the knowledge available in the customer social context (Arnould et al., 2006; Barrutia and Gilsanz, 2013). Navigation skills are defined as the ability a consumer has to use the web and search on it (Novak et al., 2000; Pavlou and Fygenson, 2006).

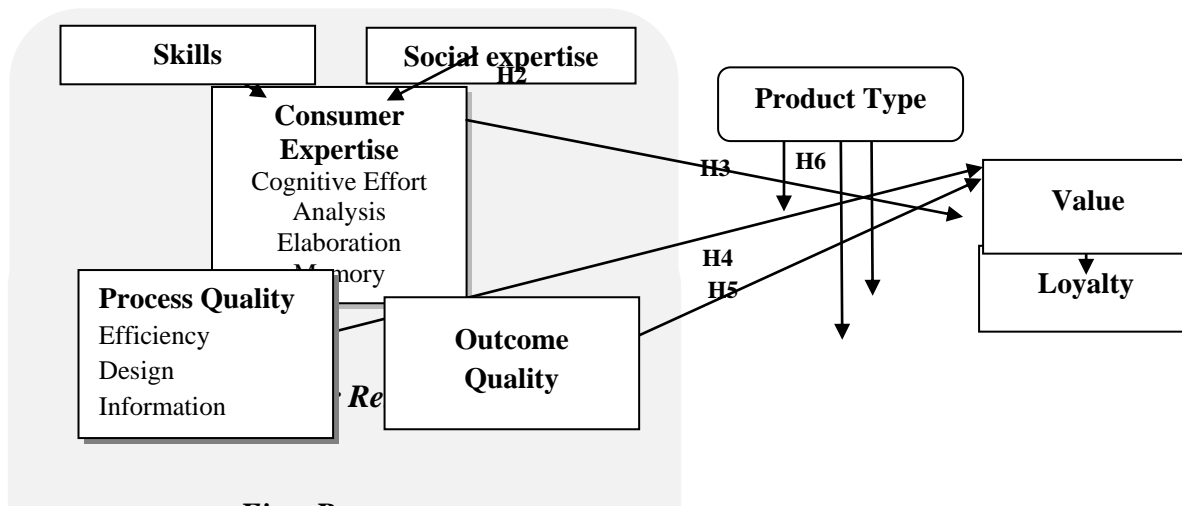
### **2.2. Firm resources**

We see ESQ as disaggregated into two major dimensions: process quality and outcome quality. Our concept of process quality includes the dimensions of information and website design, but does not consider system availability and privacy. Our view of outcome quality refers to fulfillment (Parasuraman et al., 2005; Collier and Bienstock, 2006).

### **2.3. Value perception**

Building on prior research (Parasuraman et al., 2005; Gummerus, 2010) this study intends to capture the consumer value perceptions associated with a particular context (i.e., B2C e-commerce), by considering the attributes that are particularly salient for customers in this specific context (i.e., convenience, and value for money, effort and time).

Figure 1: Proposed Model



Note: Both *Process Quality* and *Consumer Expertise* are second-order dimensions (process quality, with three first-order reflective dimensions and Consumer expertise with four).

#### 2.4. Product type

This is the first study addressed to consider the moderating role of the type of product on the relationship between consumer and firm resources and value. As a consequence, we adopt a parsimonious approach, and focus on the highest-order dimension of the system: high-outlay/low frequency (HO/LF) vs. low-outlay/high frequency (LO/HF) products. Our choice is based on the idea that cost and frequency of purchase are the characteristics that primarily affect the buying process undertaken by consumers and the salience of the different value drivers (i.e., process quality, outcome quality and consumer expertise) (Peterson et al., 2007)

### 3. Hypothesis development

#### 3.1. Web navigation skills as a predictor of consumer expertise

Navigation skills could affect consumer expertise perceptions in two ways. Firstly, navigation skills could have a direct influence on consumer expertise and its different components (Alba and Chattopadhyay, 1985). Secondly, navigation skills will have positive effects on the likelihood that people will adopt the Internet for personal purposes (Novak et al., 2000). Thus, we expect that:

H1: Web navigation skills will have a significant positive effect on consumer expertise.

#### 3.2. Social expertise as a predictor of consumer expertise

Consumer expertise (which exists in the individual) may be enriched by social expertise (which derives from collective action) when synthesized and embedded in the consumer mind (Barrutia and Gilsanz, 2013). Therefore, we expect that:

H2: Social expertise will have a significant positive effect on consumer expertise.

#### 3.3. Consumer expertise as a predictor of perceived value

From a cost and effort perspective, experts are able to perform product-related tasks more quickly and effortlessly. From a performance view, experts will better understand the meaning of product information and make wise decisions (Alba and Hutchinson, 1987). Therefore, we hypothesize that:

H3: Consumer expertise will have a significant positive effect on consumers' perceived value

### **3.4. Electronic Service Quality dimensions as predictors of value**

B2C e-commerce research shows that there is a positive relationship between both ESQ dimensions and customer value perception (Parasuraman et al., 2005; Gummerus, 2010). Consumers seem to form value assessments based on the interactive process that takes place online (process) and the outcome of how the product or service is represented and delivered. Therefore we propose that:

H4: Process Quality will have a significant positive effect on consumers' perceived value.

H5: Outcome Quality will have a significant positive effect on consumers' perceived value.

### **3.5. Moderating effect of product type**

The nature of the product, whether HO/LF or LO/HF, greatly affects consumer behavior, regardless of context, whether online or offline (Burke, 2002).

HO/LF products are important for consumers. Consumers are more likely to perceive higher risk in decision-making when buying such products. Therefore, consumer involvement tends to be high. Consumers are supposed to undertake complex buying processes which include careful information search and alternative evaluation, and pass through the belief-attitude-behavior sequence (Assael, 1987). They will need to feel confident with respect to having all the necessary pieces of information to make a supported decision. As Burke (2002) found, for infrequently purchased durable goods, consumers require retailers to provide detailed product information and excellent service. Therefore, firm resources may become essential for such products. Likewise, outcome quality will be particularly important for this kind of product. For HO/LF products, receiving exactly what was requested and expected will have a key influence on value perceptions.

LO/HF products, meanwhile, are routine purchases. While firm resources may also be important for frequently purchased goods, consumers essentially want to have fast and convenient shopping experiences (Assael, 1987; Burke, 2002). Many website information-related resources may not be required during the e-buying process.

In short, we expect that the relative importance of the positive effect of consumer expertise and firm resources (i.e., process quality and outcome quality) on perceived value will depend on the type of product. Therefore we propose that:

H6: The salience of consumer expertise (ESQ dimensions) for explaining consumers' perceived value will be greater (lower) for LO/HF products than for HO/LF products.

### **3.6. Loyalty intentions**

Given Following the quality-value-loyalty chain proposed by Parasuraman and Grewal (2000), some previous ESQ literature focuses on service quality as an antecedent of value and behavioral intentions (Parasuraman et al., 2005; Barrutia and Gilsanz, 2013). We adopt this view and extend it by incorporating the effect of consumer expertise as an antecedent of value. Therefore, we expect that:

H7: Consumers' value perception will have a positive and significant effect on loyalty intentions.

#### 4. Data collection

An e-mail invitation with a link to the questionnaire was sent to 13,903 Spanish Internet shoppers from an online panel. Respondents received an incentive to complete the questionnaire. A total of 1,187 responses were collected, with a response rate of 8.5%. Three criteria were applied to control for validity. First, we surveyed only purchasers who had completed online transactions before (not information searchers). Thus, respondents must have purchased within the previous month. Second, the respondents must know and complete the full name of the service offered and the company where they had made the purchase (incomplete names or the evaluation of more than one company were discarded). Third, the IP address of the respondent's computer was monitored to avoid multiple responses from one source. This validation process left 1,024 usable responses. The sample replicated the demographic profile of Internet buyers in Spain in terms of gender and age (see table 1).

**Table 1**  
**Spanish Internet buyers' profile vs. study profile**

Gender	Internet buyers (Spain)*	Sample (n=1,024)
Male	52.70%	52.7%
Female	47.30%	47.3%
<b>Age</b>		
<49	78.5%	75.3%
50 - 64	18.1%	22.4%
>65	3.5%	2.3%

Established scales are adapted to our specific context. Scale wordings are presented in table 2.

**Table 2**  
**Unidimensionality, Convergent Validity, and Reliability Assessment**

Factor	Item	Loading	CR	AVE
Skills	I am very skilled at using the Web.	.911	.929	.814
	I am knowledgeable about good search techniques.	.924		
	I know how to find what I am searching	.871		
Social expertise	I usually speak with colleagues and friends	.720	.874	.699
	Recommendations are important for me.	.877		
	Interaction among forum users enhances my knowledge	.900		
Cognitive Effort	I automatically know which brand to buy	.842	.886	.721
	I can find this product/service without much effort	.824		
	I can immediately identify the product I want	.880		
Analysis	I enjoy learning and knowing about this product.	.833	.865	.681
	I like to search for the latest information	.814		
	I keep up to date on the most recent developments.	.829		
Elaboration	I know that there is truth in the advertising.	.833	.849	.652
	I find it easy to choose the best product/service.	.801		
	I know what brands are best and worst.	.787		
Memory	I can recall the prices and characteristics.	.797	.878	.706
	I can recall the differences between alternatives.	.882		
	I can recall almost all existing brands from memory.	.839		
Efficiency	The website is simple to use.	.889	.944	.809
	Enables me to get on to it quickly.	.927		
	The website is well organized.	.933		
	It loads its pages fast.	.847		

<b>Design</b>	Symbols/icons are readily identifiable.	.909	.921	.795
	Everything is clearly arranged.	.909		
	Layout enables to find important things at first sight.	.855		
<b>Information</b>	The website provides information about prices.	.865	.928	.763
	Up-to-date information.	.843		
	This website provides all the information necessary.	.879		
	Information provided is easy to understand.	.905		
<b>Outcome Quality</b>	You can trust they will match what they offer.	.893	.929	.812
	Service performance is as desired.	.912		
	Service performance is absolutely reliable.	.899		
<b>Value</b>	The time I spend is very reasonable.	.862	.924	.752
	The effort involved is worthwhile.	.910		
	The overall value is worth my money and effort.	.858		
	I am satisfied with the price-quality relationship.	.837		
<b>Loyalty</b>	I will say positive things about this site to other people.	.944	.946	.854
	I will encourage friends and others to do business with this site.	.928		
	I will choose this site in the future to buy the products they sell.	.900		

## 5. Results

### 5.1. Measurement Model

Table 2 presents the results of the analyses of unidimensionality, convergent validity, and reliability. Scale wordings, standardized parameter estimates, composite reliability, and average variance extracted (AVE) are shown. All items load on their respective dimensions significantly, ranging from .72 to .944.

Most of the comparisons between construct pairs meet the requirements of the criteria, except in five cases (see values in bold in the table). Two additional tests were carried out with problematic construct pairs in order to find evidence for discriminant validity. First, it was verified that the confidence interval around the correlation between pairs of dimensions did not contain the value 1 (Anderson and Gerbing, 1988). Secondly, the correlation between each pair of latent factors was constrained to one, and was compared with a model where this parameter was freely estimated. In all cases, the Chi-square Difference Tests performed were proved satisfactory (Anderson and Gerbing, 1988).

### 5.2. Assessment of the Structural Model

Results of the overall model and the different implications of product type are presented in Table 3. All the proposed causal relationships are supported. For the overall model, skills and social expertise have a positive influence on consumer expertise (H1 and H2;  $\beta=.555$  and  $\beta=.29$  respectively;  $p<.01$ ). Moreover, consumer expertise, process quality, and outcome quality also have a significant and positive impact on perceived value (H3, H4 and H5;  $\beta=.344$ ,  $\beta=.254$  and  $\beta=.417$  respectively;  $p<.01$ ). Consumer expertise and process quality were demonstrated to be second order constructs with four and three first order dimensions respectively. A reasonable proportion of variance in the constructs for consumer expertise, value, and loyalty is explained (53%, 71% and 79% respectively).

**Table 3**  
**Structural Model Estimations**

	FULL SAMPLE n=1,024 Path coefficient	LO/HF n=501 Path coefficient	HO/LF n=523 Path coefficient
H1: Social Expertise → Expertise	.555†	.568†	.527†
H2: Skills → Expertise	.29†	.282†	.303†
H3: Expertise → Value	.344†	.487	.236
H4: Process Quality → Value	.254†	.214	.287
H5: Outcome Quality → Value	.417†	.321	.479
H7: Value → Loyalty	.891†	.88†	.89†
Fit indices	Xi <sup>2</sup> =1,808.430; df=683; CFI=.949; TLI=.944; RMSEA=.040	Xi <sup>2</sup> = 1,484.109; df=1428; CFI=.939; TLI=.937; RMSEA=.045	Xi <sup>2</sup> = 1,443.048; df=1428; CFI=.939; TLI=.937; RMSEA=.045

Table 5 reports standardized coefficients.

†We imposed cross group equality constraints on the loadings in these paths. However, the standardized loadings slightly vary because of the variances used to calculate them are different between groups

\*\*All results are significant at  $p < .01$

Before testing the moderation effect of product type, we follow the four steps procedure described by Muthen and Muthen (1998-2010, p. 433) to control for measurement invariance. In short, the procedure consists of constraining some parameters of the model to be equal. If the model fit does not worsen significantly the constraints can be accepted, which indicates measurement invariance (Hair et al. 2010). The results showed full invariance for factor loadings (Chi-sq=31.59, df=26,  $p=.23$ ) and intercepts (Chi-sq=31.6, df=34,  $p=.62$ ), and partial invariance for residual variances (Chi-sq=78.5, df=65,  $p=.12$ ). According to Hair et al. (2010) if two residual variances per construct are found to be invariant, then partial invariance is found.

The moderating effect was then tested. We compared the unconstrained structural baseline model with a second one in which ESQ dimensions and consumer expertise between the two groups were constrained to be equal. Chi-square differences proved to be significant ( $p=.03$ ) for the structural model comparisons, indicating that the total effect of ESQ dimensions and expertise on value were significantly different for both groups. As predicted by H6 (a, b, c), consumer expertise has a stronger effect for LO/HF products, with a path coefficient of  $\beta=.487$  (above  $\beta=.236$  for HO/LF products). By contrast, e-service quality measures have a stronger effect for HO/LF products (with  $\beta=.287$  and  $\beta=.479$  for process and outcome quality, respectively; above  $\beta=.214$  and  $\beta=.321$  for LO/HF products).

The R<sup>2</sup> value for both types of products is relatively high (LO/HF products: R<sup>2</sup>=.536 for consumer expertise, R<sup>2</sup>=.741 for value, and R<sup>2</sup>=.763 for loyalty; and HO/LF products: R<sup>2</sup>=.520 for consumer expertise, R<sup>2</sup>=.707 for value, and R<sup>2</sup>=.803 for loyalty).of the overall model and the different implications of product type are presented in Table 5.

## 6. Discussion

Prior cross-sectional research has shown that ESQ dimensions affect perceived value. What has not been tested is the effect of ESQ on value when consumer resources and product type are also considered. Therefore, prior ESQ research could be misleading.

Overall, our findings show that both firm resources and consumer resources have a significant positive effect on the value created in B2C e-service experiences. In particular, web

navigation skills and social expertise are shown to have a significant direct effect on consumer expertise and a significant indirect effect on perceived value. Meanwhile, consumer expertise is shown to have a crucial impact on value. As also expected, process quality and outcome quality significantly affect perceived value.

When the relationship between both types of resources and value is moderated by the product type interesting findings arise. For LO/HF products, the influence of consumer expertise is stronger than for HO/LF products. Customers who purchase LO/HF products perceive low levels of risk and undertake relatively simple and routine e-buying processes based on their own expertise. They are unwilling to waste their time and effort in taking advantage of the broad range of information and options that could be offered by the provider. As the product itself is not particularly important to the consumer, outcome quality is not so crucial in determining perceived value.

For HO/LF products (e.g. insurance), however, firm resources will have a stronger impact as consumers perceive high levels of risk and undertake more complex e-buying processes. Consumers are highly involved in the e-buying process, undertake complex processes of information search and alternative evaluation, and pass through the belief-attitude-behavior sequence. Consumers will need to feel confident with respect to having all the necessary pieces of information to make a supported decision. Therefore, consumers will appreciate process quality characteristics such as easily accessible, complete, and up-to-date information. Outcome quality appears to have the stronger effect for these types of products as the product itself is particularly important or unique for the consumer.

Interestingly, consumer expertise shows to be more important than process and outcome quality to explain value perceptions for LO/HF products. Therefore, our research spotlights a crucial value driver which has remained hidden in previous ESQ literature. The moderating effect of product type is consistent with insights from prior marketing research but counterintuitive. Intuition might suggest that expertise is more important for HO/LF products, which is contrary to our results. One tends to think that expertise is more necessary for buying an investment fund or a camera (HO/LF products) than for buying supermarket products (LO/HF), which is rational. However, our findings suggest that this effect is overcompensated by the buying behavior of the consumer. In essence, when consumers buy HO/LF products are highly involved and largely use firm resources. On the contrary, when consumers buy LO/HF products are superficially involved, automaticity is critical, and firm resources are underused.

Overall, our findings are consistent with prior ESQ literature, which considers process and outcome quality as precursors of value. However, we also show that the relative effect of process and outcome quality could have changed overtime. Thus, Parasuraman et al. (2005) find that efficiency (a process-related dimension) has the strongest effect on value, followed by outcome quality. Our results stress the importance of outcome quality. This finding might be interpreted as derived from e-commerce evolution. Nowadays, most providers will probably have improved their process quality by drawing on generalized technological progress and more extensive e-commerce experience. On the other hand, consumers are more knowledgeable about e-buying platforms and can rely more on their own resources. Finally, outcome quality improvements might be less generalized and, therefore, more distinctive.

## References

- Alba, J. W. & Chattopadhyay, A. 1985. The Effects of Context and Part-Category Cues on the Recall of Competing Brands. *Journal of Marketing Research*, 22(3), 340-349.
- Alba, J. W. and Hutchinson, J. W. 1987. Dimensions of Consumer Expertise. *Journal of Consumer Research*, 13, 411-454.



- Anderson, J. C. & Gerbing, D. W. 1988. Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin*, 103(3), 411-423.
- Arnould, E. J., Price, L. L. & Malshe, A. 2006. Toward a Cultural Resource-based Theory of the Customer, in Lusch, R. F. and Vargo, S. L. (Eds), *The Service-Dominant Logic of Marketing: Dialog, Debate, and Directions*, M. E. Sharpe, Armonk, NY, 91-104.
- Assael, H. 1987. *Consumer Behavior and Marketing Action*, Kent Publishing, New York.
- Barrutia, J. M. & Gilsanz, A. 2013. Electronic Service Quality and Value: Do Consumer Knowledge-related Resources Matter? *Journal of Service Research*, 16(2), 230-46.
- Burke, R. R. 2002. Technology and the Customer Interface: What Consumers Want in the Physical and Virtual Store. *Journal of the Academy of Marketing Science*, 30(4), 411-432.
- Collier, J. E. & Bienstock, C. C. 2006. Measuring Service Quality in E-Retailing. *Journal of Service Research*, 8, 260-275.
- Fassnacht, M. & Koese, I. 2006. Quality of Electronic Services: Conceptualizing and Testing a Hierarchical Model. *Journal of Service Research*, 9, 19-37.
- Grönroos, C. & Gummerus, J. 2014. The Service Revolution and its Marketing Implications: Service Logic Versus Service-Dominant Logic. *Managing Service Quality*, 24(3), 206-229.
- Gummerus, J. 2010. E-services as resources in customer value creation: A service logic approach. *Managing Service Quality*, 20(5), 425-439.
- Hair, J., Black, W., Babin, W. & Anderson, R. 2010. *Multivariate Data Analysis* (7th edition), Prentice-Hall, Upper Saddle River, NJ.
- Kleiser, S. B. & Mantel, S. P. 1994. The Dimensions of Consumer Expertise: A Scale Development, in Achrol, R. and Mitchell, A. (Eds), *AMA Summer Educators' Proceedings*, American Marketing Association, Chicago, (20-6).
- Muthén, L.K. & Muthén, B.O. (1998-2010), *Mplus User's Guide*, Sixth edition, Muthén & Muthén, Los Angeles, CA.
- Novak, T.P., Hoffman, D. L. & Yung, Y. 2000. Measuring the Customer Experience in Online Environments: A Structural Modeling Approach. *Marketing Science*, 19, 22-44.
- Parasuraman, A. & Grewal, D. 2000. The Impact of Technology on the Quality-Value-Loyalty Chain: A Research Agenda. *Journal of the Academy of Marketing Science*, 28(1), 168-174.
- Parasuraman, A., Zeithaml, V. A. & Malhotra, A. 2005. E-S-QUAL. A Multiple-Item Scale for Assessing Electronic Service Quality. *Journal of Service Research*, 7, 213-233.
- Pavlou, P. A. & Fygenon, M. 2006. Understanding and Predicting Electronic Commerce Adoption: An Extension of the Theory of Planned Behavior. *MIS Quarterly*, 30(1), 115-143.
- Peterson, R. A., Balasubramanian, S. & Bronnenberg, B. J. 1997. Exploring the implications of the Internet for consumer marketing. *Journal of Academy of Marketing Science*, 25 (4), 329-46.
- Vargo, S. L. & Lusch, R. F. 2004. Evolving to a New Dominant Logic for Marketing. *Journal of Marketing*, 68, 1-17.
- Vargo, S. L. & Lusch, R. F. 2008. Service-Dominant logic: Continuing the Evolution. *Journal of the Academy of Marketing Science*, 36, 1-10.
- Vargo, S. L. & Lusch, R. F. 2011. Stepping aside and moving on: a rejoinder to a rejoinder. *European Journal of Marketing*, 45(7/8), 1319-1321.