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Replication Article

Multichannel customer segmentation: Does the after-sales channel matter? A replication and extension☆

Arne De Keyser [a,*], Jeroen Schepers [b], Umut Konuş [c]

[a] EDHEC Business School, 24 Avenue Gustave Delory, CS 50411, F-59057 Roubaix Cedex 1, France
[b] Innovation, Technology Entrepreneurship & Marketing Group, Eindhoven University of Technology, De Rondom 70, Connector 0.07, PO Box 513, 5600 MB Eindhoven, Netherlands
[c] Faculty of Economics and Business, University of Amsterdam, Plantage Muidergracht 12, 1018 TV, Amsterdam, Netherlands

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ABSTRACT

Segmentation is critical in developing a successful multichannel customer management strategy. Multiple researchers recognized the need to adopt a multi-stage customer journey perspective, taking into account the channels used for information search and product purchase. This paper aims to advance previous research in this area. Specifically, we replicate and extend Konuş, Verhoef, and Neslin's (2008) original study in four ways: we include (i) the after-sales service stage and (ii) the often overlooked yet important call center channel in the segmentation scheme. We (iii) utilize self-report channel behavior instead of measures of channel appropriateness and (iv) investigate the value of previously ignored covariates, such as product complexity, to predict segment membership.

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1. Setting the scene

Offering multiple channels to meet changing customer needs and preferences along the customer journey of information search, purchase, and after-sales service poses severe challenges for marketing managers (Verhoef, Kannan and Inman, 2015). Central to delivering a unified customer experience is a thorough understanding of different customer segments and their unique characteristics. In their paper, Konuş, Verhoef, and Neslin (2008) provide a clear case for multichannel segmentation and demonstrate its managerial value in developing tailor-made strategies that serve distinct customer segments. Based on scores of channel appropriateness in the information search and purchase stages of the customer journey, their results indicate the existence of three segments—multichannel enthusiasts, uninvolved shoppers, and store-focused customers. They also identify multiple covariates, such as shopper innovativeness, to predict segment membership.

Nonetheless, three important untapped yet relevant issues remain. First, Konuş et al. (2008) did not consider the after-sales service stage and its channels. Marketing literature, however, increasingly acknowledges the importance of this stage for understanding customer behavior and revenue streams (Van Vaerenbergh, Larivière, & Vermeir, 2012) and calls have been made to include after-sales channel usage in the segmentation scheme (e.g., Gensler, Verhoef, & Bohm, 2012).

Second, Konuş et al. (2008) segment customers based on their attitude toward using a specific channel in a specific stage (i.e., perceived channel appropriateness scores). However, as attitudes do not perfectly predict behavior, channel use is suggested as an alternative approach to better reflect reality (e.g., Gensler et al., 2012).

Third, while Konuş et al. (2008) explore a myriad of covariates in relation to segment membership, Dholakia et al. (2010) note that much more research is needed to identify covariates that underlie channel choice.

This research aims to contribute to the marketing literature in several ways. To start, we replicate the study of Konuş et al. (2008); we investigate which customer segments can be discerned when a segmentation scheme considers the information search and purchase stages of the customer journey. We derive this initial *two-stage solution* by employing self-report channel use data rather than appropriateness scores.

In addition, we extend the original work by considering the after-sales stage in our analyses. We show that the resulting *three-stage solution* further improves and refines the two-stage solution.

We also consider the call center channel, because it can be a key instrument for information provision, cross- and up-selling, and troubleshooting, but it is also a channel subject to cost-cutting initiatives (Aksin, Armony, & Mehrotra, 2007). In the Konuş et al. (2008) study, catalog users largely placed their orders through a call center; we

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* Corresponding author.
E-mail addresses: Arne.DeKeyser@edhec.edu (A. De Keyser), J.J.L.Schepers@tue.nl (J. Schepers), U.Konus@uva.nl (U. Konuş).

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Table 1
Constructs and factor loadings.

Constructs and items	Factor Loading	Mean	Standard Deviation
Innovativeness (Konuş et al., 2008) (*Cronbach* $\alpha = .83$)		2.78	1.48
I regularly purchase different variants of a product just for a change	*		
I am one of those people who try a new product first, just after launch	.81		
I don't like to use the same product (or brand) repetitively	*		
I always have the newest gadgets	.89		
Risk Aversion (Mandrik & Bao, 2005) (*Cronbach* $\alpha = .82$)		4.26	1.20
I do not feel comfortable about taking chances	.71		
I prefer situation that have foreseeable outcomes	.84		
Before I make a decision, I like to be absolutely sure how things will turn out	.72		
I don't feel comfortable improvising in new situations	.69		
Product Complexity (Burnham, Frels, & Mahajan, 2003) (*Cronbach* $\alpha = .77$)		3.20	1.23
I would have to know a lot to take full advantage of the options of the product/service	.76		
The product/service is difficult to understand	.80		
The product/service is complicated in nature	.65		
Perceived Price (Verhoef et al., 2007) (*Cronbach* $\alpha = .89$)		3.61	1.22
Compared to other products/service, the price is low	.83		
Compared to other products, buying this is cheap	.97		
Compared to other products, this is not expensive	.76		
Customer Involvement (Srinivasan & Ratchford, 1991) (*Cronbach* $\alpha = .86$)		3.58	1.46
I like to engage in conversation about buying this product/service	.78		
I enjoy reading and talking about buying this product/service	.93		
I am interested in buying this product/service	.76		

Note: $\chi^2 = 97.949$. $df = 80$, the comparative fit index (CFI) = 0.991, Tucker-Lewis index (TLI) = 0.989, root mean square error of approximation (RMSEA) = 0.027, and standardized root mean squared residual (sRMR) = 0.043, .

* Dropped item, factor loading <.50.

further investigate the importance and use of this channel for information search and after-sales.

Additionally, we provide new insights by exploring the value of under-researched yet actionable covariates in predicting segment membership, such as risk aversion and product complexity.

Furthermore, we gather data from a telecom retailer. Telecom was not included among the categories examined by Konuş et al. (2008). Finally, our data are collected nearly 10 years after the original study data and our sample skews toward more female and younger respondents. This provides further insights into the generalizability of multichannel segmentation schemes.

2. Data collection and measures

We collected survey data among 314 customers of a Dutch telecom retailer, selling mobile solutions, such as devices, their accessories, and subscriptions (see Web appendix for sample details). The retailer has implemented a multichannel structure, offering customers the possibility to interact with the firm through three channels: brick-and-mortar stores, the Internet, and a call center. We asked respondents to report what channel(s) they employed during the different stages of their most recent complete customer journey. The interval between purchase and study participation was limited to a maximum of four months to accurately remember channel usage (cf. Srinivasan & Ratchford, 1991). We include five latent variable covariates that characterize differential customer responses to marketing actions (e.g., Ailawadi, Neslin, & Gedenk, 2001; Verhoef, Neslin, & Vroomen, 2007) but have been largely left unexplored in multichannel segmentation research. These covariates are operationalized using multi-item, seven-point Likert scales.

After dropping two customer innovativeness items, the alpha coefficients of all five covariates are above the commonly accepted threshold of .70. A confirmatory factor analysis in lavaan 0.5 (Rosseel, 2012) indicated an acceptable fit between the measurement model and the data. Constructs also displayed satisfactory reliability and validity scores. Table 1 reports individual items and item loadings. We used the mean scores for each of the constructs for further analysis.[1]

[1] Analyses with factor scores based on principal component analysis yielded similar results. We therefore only report results based on the mean scores.

Finally, we also include age, gender, loyalty (i.e., total number of transactions in customer history), and average revenue (i.e., in current *and* past transactions) as covariates in our segmentation analyses.

3. Analysis and results

3.1. Model and analysis

Following Konuş et al. (2008), we employed Latent Class Cluster Analysis (LCCA) and posit that channel usage depends on the utility (i.e., cost-benefit considerations) the customer derives from a specific channel for a specific stage of the customer journey. Our utilities are reflected in the usage status (Yes/No). LCCA then segments respondents on the basis of their usage status for different channels (online, brick-and-mortar store, and call center) and stages of the customer journey (information search, purchase, and after-sales) while considering the impact of covariates on segment membership. We use the following model specification:

$$f\left(y_i|z_i^{act\_cov}\right) = \sum_{x=i}^{K} \prod_{j=1}^{J} f\left(y_{ij}|x\right) P\left(x|z_i^{act\_cov}\right)$$

where y_i denotes a set of J response variables (indicators) that measure customer i's channel use, and y_j is an indicator of customers' usage status for three channels in three different stages. The latent variable (x) is categorical, with K segments. K is not predicted a priori but determined by the model selection criteria (Vermunt & Magidson, 2005). $z_i^{act\_cov}$ indicates the vector of active covariates that could affect the latent variable but have no direct influence on the indicators. Finally, $f(y_{ij}|x)$ represents the probability distribution of customer i's response to a particular indicator j, given that customer i belongs to segment x, and $f(y_i|z_i^{act\_cov})$ is the joint probability function of customer i's response to all indicators, as influenced by active covariates.

3.2. Results

We estimate our model for solutions from one to eight clusters and apply the adapted Akaike Information Criterion (AIC3) for model selection since simulation studies show it outperforms AIC and BIC (Andrews

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